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Report of the Task Force on California's Water Future

Commission for Economic Development

Report of the

TASK FORCE ON CALIFORNIA'S WATER FUTURE

STATE OF CALIFORNIA
COMMISSION FOR ECONOMIC DEVELOPMENT

Table of Contents

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State of California

Commission for Economic Development

April 12, 1982

The Honorable Mike Curb
Lieutenant Governor of California
State Capitol, Room 1028
Sacramento, CA 95814

Dear Governor Curb:

It is my great pleasure to transmit to you as Chairman of the Commission for Economic Development the report of that Commission's Task Force on California's Water Future.

This report contains extensive findings and a series of conclusions which are intended to assist the citizenry in voting June 8 on Proposition 9, the referendum on SB 200.

The members of the Task Force wish to express their gratitude for the opportunity to study and report on this issue of critical importance to the economic future of our state. We have received the most generous support in obtaining information from the numerous federal, state and local agencies involved in the various aspects of this issue, as well as from private citizens and public interest organizations.

The Task Force, as you know, may not by law receive any public funds for its support. For that reason we are doubly grateful for the voluntary assistance given to us by all the above.

The State Department of Water Resources, in particular, has devoted a great deal of time and had extensive input to our study.

Finally, without the report writing skills and sound technical advice of our water law counsel, Anne J. Schneider, this report would literally have been impossible.

Most sincerely yours,

A. Alan Post
Chairman

Joseph E. Baird

Honorable John Garamendi

C. Robert Barnum

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EXECUTIVE SUMMARY

The Task Force on California's Water Future was appointed by Lieutenant Governor Mike Curb, pursuant to his authority as Chairman of the Commission for Economic Development. The Task Force studied the issues associated with SB 200 and ACA 90 and has developed an extensive series of findings and conclusions which have been submitted to the Commission for Economic Development in this report dated April 12, 1982.

Proposition 9 on the June 8, 1982 ballot is a referendum on SB 200 and ACA 90. A vote to approve Proposition 9 would approve both SB 200 and ACA 90. A "no" vote would nullify both. SB 200 provides for additional State Water Project (SWP) facilities, including the Peripheral Canal. SB 200 and ACA 90 together place substantial restrictions and conditions on construction of additional State Water Project facilities and State Water Project operations. (See Findings beginning at page 23 and at page 74)

COSTS (See Findings beginning at page 30)

The total costs of SB 200 remain uncertain. There are questions as to what is to be built, when it will be built, and what to include in the costs. Based on the construction

schedule and related inflation rates cited by the Department of Water Resources (DWR), bond interest at current market rates, and the construction schedule if all SB 200 projects that DWR now intends to build are constructed, the Task Force has concluded that the total cost would approximate $19.3 billion, plus other unknown costs.

FEASIBILITY OF FINANCING THE COST (See Findings beginning at page 41)

The ability to finance the full program in SB 200 is extremely questionable due to problems with the three major funding sources. These funding sources are: project revenues, tidelands revenues and bonds. Project revenues are currently strained to meet existing bond retirement obligations and current costs of the State Water Project. Tidelands revenues scheduled for water development have been transferred to help balance the state's budget and additional transfers may be needed in the future. Bonds programmed to fund the projects cannot reasonably be sold at the existing 8½% legal limit. The current legal interest ceiling for power bonds has been raised to 13%, for example. If the legal interest ceiling is raised to permit sales of water bonds the project costs rise sharply.

A "pay-as-you-go" plan developed by the Department of Water Resources in response to Task Force questions about the feasibility of bond financing turns out, upon examination, to be a device which merely shifts bond funding costs elsewhere. In part it transfers the costs to local districts whose budgets are already strained, and in part it transfers project revenues from non-SB 200 projects of the Department to SB 200 purposes. DWR would then expect to have to issue revenue bonds to finance the facilities from which the revenues have been transferred. The effect is "borrowing from Peter to pay Paul" rather than "pay as you go". As such, it is misleading to label it as a proposal which avoids the costs of borrowing.

RATES (See Findings beginning at page 52)

Prospective water rates will depend primarily on uncertain factors such as future bond rates, inflation and energy costs. Water rates are certain to rise sharply after 1983 due to the expiration of DWR's low-cost energy contracts negotiated in the 1960's with public utilities.

DWR has projected extraordinarily low energy cost increases based on the assumption that it will produce more than half of its own power. The Task Force questions the extreme disparity between public utilities' power rates and those which the State Water Project forecasts for itself. A number of the state's

planned energy sources are experimental and speculative both as to the amount of power produced and its cost. This energy component of the State Water Project's water user rates needs careful review and verification by independent authorities. If power rates exceed DWR's projection the increases in SWP water rates would be even more substantial.

FISH AND WILDLIFE GUARANTEES (See Findings beginning at page 71)

SB 200 and ACA 90 provide stronger water quality protection measures in the Delta. The Peripheral Canal is regarded by fish and game experts as the preferred Delta facility and a definite improvement over existing conditions.

The Task Force, however, believes that the guarantees are far less certain in real life than they appear from the language of SB 200. Federal Fish and Wildlife officials are skeptical of the effects of the experimental fish screens and the increased export of water by the Peripheral Canal. SB 200 requires a two-year test of the fish screen and if it is determined to be unsatisfactory, construction of the Canal would be stopped despite expenditures already incurred in excess of ½ billion dollars. The Department of Fish and Game (DFG) would have preferred to experiment before commencing construction. There

is no fish screen comparable to the one to be built anywhere in the world.

REQUIRED AGREEMENTS (See Findings beginning at page 23 and 71)

SB 200 requires that a number of conditions be met before the Canal can be utilized fully. The federal government must agree to meet the quality standards set by the State's Water Resources Control Board before the state can transport water for the federal CVP through the Canal. The Federal government currently will not agree to meet such a commitment, especially in dry or critically dry years.

The DWR and DFG must also agree to restore, maintain and enhance as yet undefined historical standards for fish and wildlife in the Delta. Similarly undefined are the standards for operation of the fish screens proposed for the Peripheral Canal.

In view of the numerous factors contributing to the decline of fisheries and wildlife, including industrial pollution, it will be difficult for DFG to single out the harmful effects caused exclusively by the water projects. The DFG, in fact, states that it cannot at this point make such a determination of separate effects. These uncertainties make it difficult to see

how the statutory requirement to restore, maintain and even enhance historical fish and wildlife standards can be implemented.

WHO PAYS AND WHO BENEFITS? (See Findings beginning at page 52)

The Metropolitan Water District of Southern California (MWD) pays for considerably more SWP water than it presently receives. At the same time, the Kern County Water Agency benefits from the fact that it can buy surplus water from the SWP at surplus prices of $5 an acre-foot. Through 1981, the Kern County Water Agency has used 47 percent of the water delivered by the State Water Project but has paid only 11 percent of the total cost.

Within MWD, moreover, there are additional disparities which appear to favor suburban users over residents of the City of Los Angeles. In urban areas the extensive use of property taxes shifts the cost to small users. In the MWD the property tax is a major cost element. According to Members of the City Council, in the current fiscal year, LA City will pay MWD $3.8 million for water charges, but additionally will pay MWD $14.6 million in property taxes. There is no dispute that water users in LA City pay a disproportionately high price for the amount of water they receive from MWD.

LEGAL ISSUES AND POTENTIAL DELAYS (See Findings beginning at page 94)

It must be expected that SB 200 will be challenged in numerous lawsuits. Even though ACA 90 provides for an expedited process for resolving some of those issues in state courts, some remedies will probably be sought in federal courts.

Water development and export raise complex and devisive issues and will be the subject of lawsuits regardless of the vote on Proposition 9. It would appear that SB 200, however, by its uncertain terms and requirements particularly invites litigation. Any resulting delay will increase the costs of the various projects and delay delivery of water or fulfillment of other project purposes.

WHAT CAN BE BUILT IF PROPOSITION 9 FAILS? (See findings beginning at page 118)

It seems clear that the Peripheral Canal and certain other features of SB 200 can be built under existing law (Burns-Porter Act) even if Proposition 9 fails. Whether it would be politically feasible depends on the will of the governor.

It would also be possible to build an alternative through-Delta facility. The Burns-Porter Act gives clearer authority for

construction of a through-Delta facility than it does for a Peripheral Canal.

WHEN IS WATER NEEDED IN SOUTHERN CALIFORNIA AND THE CENTRAL VALLEY? (See Findings beginning at page 108)

There are numerous factors which must be considered in determining when water is needed in the Central Valley and Southern California. The MWD believes that, using it's assumptions, it will experience a water shortage in 1990 if that year is dry or critically dry.

The Task Force believes MWD has overstated its demand in 1990 and 2000. Likewise, MWD has understated the opportunity for short-term conservation and reliance on groundwater reserves in a dry year. MWD has assumed that all resources available to it will be short simultaneously. This is highly unlikely but could be met in any case by short-term insurance- type measures with a degree of water conservation not exceeding that achieved in the 1976-77 drought.

IS IT NECESSARY TO EXPORT MORE WATER? (See Findings beginning at page 116)

Some increased efficiency in agricultural and urban water usage is possible. Agricultural efficiency is high, however, and much water that may appear to be wasted is in fact added to

underground basins or becomes available for downstream use. Nevertheless, there are improvements in pricing and marketing practices which could produce significant water economies, particularly in respect to existing use of water on land of low productive value. Legal and institutional changes will be required to achieve these economies.

DWR assumes that up to 700,000 AF of water can be saved annually through various wastewater reclamation and conservation programs within SWP service areas. Additional water can be saved by exporting and storing surplus water in wet years in groundwater basins.

There is a long-term and cyclical aspect to potential water needs and available supplies to meet those needs. Long-term growth will require more water. But there is presently excess or surplus water which is sold at cheap prices in normal years. A sound insurance-type approach to surplus years and dry years has the potential for meeting future needs with amounts which are less than those projected by the MWD and DWR. MWD has historically overstated its prospective water demand. This appears to apply equally to its current forecasts. The long-term needs of Southern California must be met as they definitively occur, however.

IS THERE AN ALTERNATIVE TO THE PERIPHERAL CANAL? (See Findings beginning at page 76)

The Task Force concludes that the consideration of an alternative through-Delta approach offers an opportunity to meet necessary water export requirements at substantially lower costs and shorter water delivery times with no determinably greater environmental risks than with a peripheral canal.

STATEMENT OF CONCLUSIONS

INTRODUCTION

Analysis of future water needs and probable costs and effects of water development in California is exceedingly complex. It involves myriads of assumptions, and California's past experience as to the accuracy of such assumptions in respect to fisheries impact, demand, yield, and cost, for example, is not reassuring. SB 200 is a piece of legislation which attempts to provide assurances to all of the sharply differing interests which debated the issue in the Legislature. There are those who think it is a work of art in welding together the divergent views. Conversely, there are those who believe it is unworkable -- that it tries to promise all things to all people.

The problems addressed by SB 200 and ACA 90 are not new. A long series of proposals to correct unsolved problems in the original California Water Project as well as to increase the export of water to the South have been studied and discarded for reasons of cost, engineering or pressure from special interests. This is not to say that SB 200 has finally resolved those problems. Rather, it is the specific legislative decision which has now become the subject of a referendum.

On June 8, 1982, the citizens of California will vote on Proposition 9 as a referendum measure to approve or reject

Senate Bill 200, enacted in 1980 by the Legislature and the Governor. SB 200 mandates the building of the Peripheral Canal and authorizes or reauthorizes new major facilities of the existing State Water Project. On the one hand, the projects listed in SB 200 which are already authorized under existing law are already legally able to be financed by project revenues, tidelands funds, and the sale of bonds. On the other hand, however, what DWR may build , based on the very brief project and study descriptions in SB 200, is not certain or limited in any sense. SB 200 can be viewed as a "blank check" to DWR for future project development.

Allied with the vote on SB 200 is ACA 90, passed by the electorate in 1980 as Proposition 8, to provide somewhat stronger voter controls over existing Delta Water protection laws and over existing statutory limitations on development of North Coast rivers. If SB 200 is not approved, ACA 90 also dies.

The California Water Task Force was created under the authority of the State Commission for Economic Development. It has given months of study to the voluminous documents prepared by state water agencies, heard extensive testimony from numerous state, federal and local public bodies and interested citizens, and has developed a comprehensive report of findings and conclusions on Proposition 9.

Its deliberations centered on 1) costs, 2) anticipated financing methods, 3) prospective water rate increases, 4) the potential for benefit or damage to fisheries and wildlife, 5) the numerous uncertainties and risks embodied in the provisions of SB 200, 6) the merits and demerits of alternative engineering approaches to water transfer across the Delta, and 7) the potential water efficiencies and dry year reserves which might substitute for or reduce the costs and risks of further export of water from the Delta.

It is immediately apparent that concerns for these various issues differ substantially in form and degree among the various regions of the State. Many people in the counties surrounding and north of the Delta are greatly concerned with the impact of increased water exports on the Delta and San Francisco Bay. They are concerned that obtainable sources of water they will need for future development will be exported to the south and that their county of origin rights to that water will be meaningless when the water is a well established part of the demand of an ever growing Southern State. They are concerned that the State Water Resources Control Board has the power to change Delta water quality standards, and neither SB 200 nor ACA 90 limit that power. They are disturbed that the requirement in SB 200 of reestablishing and maintaining fisheries and wildlife at historical levels is a nebulous, undefined goal within the control of the Department of Fish and

Game, and possibly unachievable in any true sense. They are concerned that the decision making will constitutionally be placed in the hands of two political appointees serving at the pleasure of the Governor, one of whom is the Director of the Department of Water Resources, the agency which runs the State Water Project.

The counties to the south are principally concerned with the prospective need for more water, and its cost to them as water users, both agricultural and urban. Farmers in the Central Valley fear that their water needs in critically dry periods will not be met in view of the guarantees in SB 200 to fisheries and other Delta interests, added to the existing contract priority given to urban users.

Both north and south should reasonably be concerned that the costs to agriculture, industry and for personal consumption are as low as feasible. Water rates, property taxes, energy prices and general commodity prices are pushed upward by increased water costs. Water must be available for continued growth of the state, but it is such a vital and pervasive element of the economy, affecting all consumers, that it should be developed at the lowest economic cost, used in the most efficient manner, and paid for in a way which is fair to all water users. Local districts impose water charges and substantial property taxes on their residents for water use

which must also be considered along with the state's water financing program in assessing the full impact of further costly water development.

Most of the official literature supplied by the state and local water agencies with reference to SB 200 generally disregards these interrelated and supplemental local costs. The Task Force attempted to pull together and consider carefully all available information on every element of cost needed to understand the water program.

Our analysis differs to varying degrees from many of the official water agencies' stated conclusions with respect to cost reporting, fish and wildlife effects of the Peripheral Canal, the feasibility of alternative water transfer approaches, the contingencies and risks built into SB 200 and, finally, the extent to which water exports to cover growth and dry years are needed at this time.

COSTS

Our analysis of costs differs markedly from the single estimate cited by the Legislative Analyst in the Ballot Pamphlet. Our study separately identifies the construction cost, the interest cost, and the inflation cost as calculated by DWR in its project Bulletins. It also identifies the additional cost to the local water districts, as reported by DWR, for the capital

costs of facilities which must be constructed to distribute the water locally. It takes note, without attempting to establish a hard estimate, of the impact which large new bond flotations will have on bond issues needed for other state and local purposes, a cost normally recognized in analysis of proposed bond issues and a matter of no small fiscal consequence.

Because of the uncertainties of inflation rates, interest rates and these indirect bond effects, the Task Force has elected to identify and consider each of these separately, as well as collectively. This treatment allows the voters to make independent judgments as to the cost elements and assumptions they think most appropriate or significant. This avoids the confusion which has been generated by the numerous and varied approaches taken by the official water agencies and those who have used one or another of those estimates for partisan purposes. For various reasons, including differences in timing, which project facilities are included, and inflation or interest cost assumptions, estimates have ranged from $600 million to $23 billion.

The Task Force's findings as to cost estimates can be summarized as follows:

- The "in excess of $3.1 billion" figure shown in the ballot pamphlet is the construction cost of those projects listed in SB 200 which DWR now proposes to build, as though they were all

built in January 1981; the estimate includes no inflation over the construction period to the year 2000, and includes no interest cost.

- The $5.4 billion estimate reported by DWR to the Task Force and in numerous bulletins, contains inflation at the rates assumed to be reasonable by DWR, with the increased construction costs applied in accordance with the construction schedule projected by the Department. It includes no interest cost.

- A cost of $12.5 billion results from adding to the construction costs of $5.4 billion the interest costs as scheduled by DWR and its bond advisor, Dillon Read & Co., at 8½% borrowing rates.

- Local district costs (costs which of necessity must be reflected ultimately in the increased water rates of districts) add another $1.5 billion to the total cost, making it $14 billion. This amount will be funded by district borrowing, available reserves, property taxes or user water rates. Even if districts do not borrow for the purpose there is still an implicit or "economic interest" cost due to loss of interest earnings on the district revenues used to pay DWR.

- In all of these foregoing estimates the Task Force has used the DWR inflation or interest rate assumptions. However, the

Task Force believes that it is reasonable to question whether bonds can be sold at 8½%. The bond advisor to DWR informed the Task Force that it used 8½% only because that was the existing statutory limit, but that if the interest rate ceiling were raised to the level needed to meet current market conditions, the bonds could in its opinion be sold in the amounts proposed by DWR.

- If, for example, bonds were authorized to be sold at rates up to 12%, the added bond interest cost would raise total state costs for SB 200 to $17.8 billion. A 12% rate is comparable to other state issues where the legal interest ceiling has been raised. To this should be added the local district costs of distribution facilities of $1.5 billion, making a total of $19.3 billion.

FINANCING THE PROJECTS

The ability to finance the full program contained in SB 200 appears to be extremely questionable. For this reason both DWR and MWD spokesmen have stated that the Peripheral Canal is the main object of the bill - - in the words of MWD's witness, "the only thing on the table", and therefore the only facility for which financing would be required.

The financial problem applies to all three of the principal sources of financing for the bill: project revenues, tidelands

funds and bonds.

Project revenues are currently strained to meet the already incurred bond obligations as well as the current costs of the California Water Project. Only as the bond repayment costs fall off will revenues significantly exceed current cash needs and thus be available for additional project funding. Not until after 1985 will the California Water Project begin to acquire revenues in excess of its expenses. These project revenue surpluses supply the major source of funding for SB 200 projects.

Tidelands revenues are allocated to a number of state purposes including higher education. In recent years they have grown markedly with rising petroleum prices. The law accordingly was changed to reallocate those revenues to six special funds, with prioritized target funding levels rather than fixed dollar or percentage amounts. The California Water Fund was scheduled for $25 million annually, and $5 million to the Central Valley Project Construction Fund.

However, the 1981 Legislature transferred tideland funds to help balance the Budget. Again, in this year's Budget the Governor proposed additional transfers. The California Water Fund and CVP Construction Fund would be reduced from $30 million to less than half that amount. This is of particular

significance to the Peripheral Canal because it's financing depends heavily on those funds due to the limited project revenue situation described previously. DWR regards the funding slippage as a one year agreement with the Governor, arising out of the current budget crisis. The real question, however, is whether the state's fiscal problems are a one year matter. All evidence is that they are not.

According to the Legislative Analyst, "Any reduction of those (tideland) revenues for more than one year would impair the construction schedule of the project." Both the Controller of DWR and a special DWR Task Force studying the subject are similarly concerned about the department's serious funding problems. An amount equal to approximately half the funding of the Peripheral Canal is programmed to come from tideland revenues.

The third major source of financing for SB 200 is revenue bonds. It will be difficult to sell the bonds in the currently poor market. Sales may be possible only if the present legal interest ceiling of 8½% is raised. The DWR already is concerned about its ability to sell its power bonds at the legal limit of 13% now established for those issues. DWR's proposal to sell over $2¼ billion in revenue bonds for water projects will be the first use of revenue bonds for that purpose. It seems clear that they cannot be sold in the near future at the current legal interest rate ceiling.

DWR prepared "pay-as-you-go" studies that assumed no use of revenue bond financing. Surcharges would be imposed on contractors of up to 23% to obtain the necessary revenues. The Task Force believes that the "pay-as-you-go" studies are misleading because they merely shift the costs to the contractors and shift the need for revenue bond financing from SB 200 facilities to non-SB 200 facilities.

The mandate in SB 200 for immediate construction of the Peripheral Canal may be a financial fiction. The ability to finance other of the SB 200 projects at the cost levels and times scheduled by DWR is even more remote. Skepticism as to completing the projects in SB 200 was characteristic of all the testimony received from water agencies in the hearings of the Task Force.

WATER RATE INCREASES

The Task Force believes, as does DWR, that prospective water rates are important to consider along with costs. DWR, in fact, would give primary attention to water rates since water rates take into account additional yield which would be available. However, the Task Force believes both the total cost and resulting water rates should be given equal attention.

Water rates include a series of cost elements: capital costs, transportation costs, energy costs (especially significant to users south of the Tehachapis) and other maintenance and operation costs. The rates vary, accordingly, throughout the state. The reasons for variations are numerous, and reflect more than the fact that transportation costs vary depending on the point of delivery. The additional factors not reported by DWR which contribute to rate differences include varying property tax policies among districts and differing district borrowing practices. There are also important differences in the amounts which some districts such as MWD pay to maintain an entitlement to receive State Water Project deliveries which are well in excess of current needs. Some districts are paying for entitlement water they don't need, which allows other districts to obtain that water at cheap surplus prices. This appears to be an unfair cost to many urban users, most particularly in the Metropolitan Water District. (When a contractor pays for entitlement water which is not delivered and used, that payment is for capital costs, not transportation and energy costs.)

Water rates will rise sharply in 1983 regardless of further water development, due largely to expiration of DWR's low cost contracts for energy purchases from public utilities. There is considerable debate over what the rate of increase in energy costs will be up to the year 2000. Forecasts by the State

Energy Commission for public utilities differ from what should be applied to the State Water Project. The former use more of the higher cost energy sources than does the California Water Project. One-half of DWR's energy is from hydroelectric generation. One of the difficulties in estimating DWR's future energy costs is its mix of proposed sources which includes coal, wind, geothermal, biomass, water exchanges and purchases. Some of these are speculative such as rice-residue-fueled plants, and solar photovoltaic applications.

The Task Force has found no careful study of the assumptions and calculations made by DWR for its projected energy costs. The contrast between the Energy Commission public utility rate projections and those made by DWR are noted, however.

The following examples are illustrative:

PROJECTED ENERGY RATES - SWP AND PUBLIC UTILITIES

(Cents per kilowatt hour)

	1981	1985	1990	1995	2000
PG&E	5.61	8.31	12.45	17.83	32.82
So. Cal Edison	6.83	10.29	16.05	25.07	36.54
San Diego G & E	8.30	13.18	22.94	37.25	47.56
State Water Project	.45	2.77	4.06	5.31	8.02

The degree of disparity in energy rates merits careful analysis. The analyses received by the Task Force from individual engineers and economists express the view that the DWR projections for the State Water Project are substantially understated. The implications of the differences, in view of the enormous amounts of energy required to pump and transport water, are extremely significant as to water rates. DWR water rates reflect its energy cost assumptions. If they are too low, water rates will rise correspondingly.

Water rates are estimated by DWR both in existing (1981) dollars per acre foot, as well as inflated dollars, i.e. rates in future years reflecting the costs of projects scheduled to be built pursuant to SB 200. The escalated costs assume an 8½% interest rate, 9% yearly construction cost rises, and 7% annual increases for operation, maintenance and replacements. Unit water rates rise substantially in all SWP service areas. Unit rates, in excalated dollars, rise from a present rate of $160 per acre foot to $753 per acre foot in the Southern California service area by the year 2000. If interest rates exceed 8.5%, or if power costs exceed DWR projections, the increases in SWP unit water rates will be even more substantial. It is also important to note that DWR's unit costs are all "canal-side" costs.

FISH AND WILDLIFE ISSUES

The Task Force took many hours of testimony from the State Department of Fish and Game (DFG) and others. One of the main questions concerned the fish screen which SB 200 requires to be tested for two years after the first stage of the Peripheral Canal is built. DFG, which supports construction of the Canal subject to the two-year trial period, believes the fish screen ultimately will work. The Task Force concludes, however, that the uncertainties expressed by all witnesses, including DFG, do not warrant that conclusion.

It would be appropriate to quote from the written statement and oral testimony presented to the Task Force by the U. S. Fish and Wildlife Service.

> "1. Screens are never as effective or reliable as planned.
>
> 2. Present water quality standards are inadequate to protect the fisheries of either the Delta or the San Francisco Bay.
>
> 3. Water quality standards may be reduced, and in-basin fishery needs may be forgotten, as pressures build for greater diversions from the Delta.
>
> 4. Additional export from the Delta is not likely

to help San Francisco Bay, and it certainly won't help the Delta."

Additional adverse comments are discussed in the Task Force findings in Section 4. The U. S. Fish and Wildlife Service states that while a well designed and operated Canal has the "potential" for benefit to some species, it will be "high risk activity for both fish and wildlife." It conditions its guarded recommendation on the premise that the Canal does not increase total export from the Delta to more than 5 million AF. Yet the proposed export of federal and state water combined in a dry year will be 6.7 million AF. The U.S. Fish and Wildlife Service certainly does not strongly endorse early construction of the Canal as implied by the California Water Commission.

The California Water Commission in it's position paper on SB 200 states,"While Delta salinity in recent years (especially dry years) is significantly better than under pre-project conditions, the fishery is not." The Commission discounts claims that the Peripheral Canal "will divert more than 70 percent of the flow of the Sacramento River and thus ruin the Delta." It does so by stating that "it is a well documented fact that the export capacity of the Canal is 18,250 cubic feet per second (CFS) - - which is therefore the maximum flow that can be diverted. The capacity of the Sacramento River and its adjacent flood bypass is over 500,000 CFS in the vicinity of the proposed Canal intake. Winter flows of 50,000 CFS to

100,000 CFS in the Sacramento are typical and higher flood flows are not uncommon.

This explanation misses the mark. The problem is not the flow during flood periods. The problem exists at times of the year when flow is reduced. What portion of the River will be taken then? The effect on fisheries is critical.

The Task Force also notes that the ultimate decision as to whether the Canal should or should not proceed, after hundreds of millions of dollars have been spent on the Canal, will be in the hands of the Directors of DFG and DWR. It is not only high risk for the fisheries and wildlife. It would similarly be high risk for the ratepayers who support the Canal if it were to be suddenly aborted in the middle of construction. The criteria for acceptability of operation of the screen has not been defined and will not be defined until after the people vote on Proposition 9. The testimony at the Task Force hearings indicated that there is no fish screen in existence of the type contemplated for the Peripheral Canal.

The degree of risk is magnified by the fact that the screen to be tested at the entrance to the canal will be one-quarter the size of the huge and unprecedented screen to be placed in operation. How those model results are to be extended to the full size screen is not clear. A high risk method of testing a

high risk fish screen compounds the element of uncertainty as to results.

WHO PAYS AND WHO BENEFITS?

Water users in California are increasingly concerned that along with the rising cost of water development more attention should be paid to who pays for the water and who obtains the benefits. If "fairness" in this respect means that water users should pay, as individuals, rates which are reasonably close to the cost of developing the water, and thus pay reasonably equal shares, there is considerable evidence that the present and proposed system is extremely unfair.

The Metropolitan Water District pays for far more SWP water than it presently receives. At the same time the Kern County Water Agency benefits from the fact that it can buy the water which would have been delivered to MWD as entitlement water from the SWP at surplus water prices of approximately $5 an acre foot (which must be compared with rates in some parts of Southern California which are more than 100 times that rate). Through 1981, the Kern County Water Agency has used 47 percent of the water delivered by the project but paid only 11 percent of the total cost.

Within MWD, moreover, there are additional disparities which appear to favor suburban users over residents of the City of

Los Angeles. In urban areas the extensive use of property taxes shifts the cost to small users. In the MWD the property tax is a major cost element of LA's high user rate. The Los Angeles Times reported on February 10, 1982, that according to members of the LA City Council the City will pay MWD $3.8 million for water, but will pay $14.6 million to MWD in property taxes in the current fiscal year.

IS IT NECESSARY TO EXPORT MORE WATER?

The decision on SB 200 is a "watershed" decision which will affect how and to what extent new water will be developed in California in the future.

Considering the risks and uncertainties in SB 200, is the need for water such that SB 200 should be approved in any case? Is SB 200 the best vehicle for carrying out a decision to expand the California Water Project? The best answer to these questions involves careful review of the alternative methods of meeting legitimate growth needs for water as well as the alternatives for increased efficiency of water usage, the potential for conservation and then, finally, export. It also includes careful consideration of whether in relation to both cost and benefits the Peripheral Canal or an indelta transfer approach is the best method of resolving problems in the Delta.

Some increases in efficiency of irrigation practices are possible but not to the extent which many believe can be achieved by expanding the current level of drip and sprinkler applications, by changing from flat rate water pricing, and by lining ditches, for example. Much water that appears "wasted" in fact either percolates into groundwater basins or rejoins streams for reuse downstream. Nevertheless, there are efficiencies in irrigation practices which can and should be expected to assist in meeting future needs.

Greater incentives to increase irrigation efficiencies and apply water to the most productive land and crops would be created with changes in water pricing and in the legal bases for improved groundwater management. While research is limited, it does show that farmers consider water prices in making decisions as to the best use of the best land. Fair water pricing is not only "fair", it is good economics, in water as in other commodities or values. It promotes conservation in both agricultural and urban use.

DWR assumes that annual savings of up to 700,000 AF of water are possible through various wastewater reclamation and conservation programs in the California Water Project service areas. Additional water supplies can be obtained by exporting surplus water in wet years for replenishment of groundwater basins. These, together with strong conservation measures in both urban and agricultural usage during time of scarcity,

combine to meet dry year needs. The DWR has studied these possibilities and in principle recognizes their potential. However, it tends to emphasize the institutional and legal barriers to their implementation. It appears to the Task Force that the potential for impounding surplus waters and initiating conservation measures is of sufficient importance, especially in meeting Southern California water needs, that it deserves intensive effort and documentation similar to that given to planning for water export.

The group of issues contained in SB 200 are extraordinarily difficult to evaluate and the correct answers to all of them are elusive. This is especially true of the critically important questions relating to the need for water. The decision on SB 200 is unquestionably a "watershed" decision which will shape how and to what extent new water will be developed in the future. Will Southern California and the San Joaquin Valley actually run dry or nearly dry? Or is it more a matter of temporary shortages? What alternative short-term conservation measures could carry urban and agricultural users over the dry year(s). What longer term conservation facilities or practices might possibly provide a long-term balance between water supply and essential demand? What steps can be taken to eliminate net long-term overdraft of underground basins?

The Task Force's review of the water demand forecasts, their assumptions, and the facts behind the assumptions have

convinced it that the simplistic answers being distributed by many advocates and opponents are faulty. The "when the faucets run dry" argument has no genuine validity or applicability to the SB 200 issue. Similarly, the "conservation is the answer" solution has to be dealt with realistically and with informed perspectives.

There is, in fact, both a long- term and cyclical aspect to the problem. Long-term, there is an expected growth in demand beyond our existing capacity to meet it. At the same time there are long term opportunities for reducing the loss of water through evaporation, seepage from unlined canals and wastage into the Salton Sea.

There are ways to "bank" water, reprocess it, and by altering the current methods of pricing water and changing laws to improve its availability and management, increase both its value and its efficient use.

As to the dry cycle problem it is possible to make provision for insurance type programs, combining use of water storage which is available for times of shortage, with short term emergency measures promoting conservation, and temporary overdraft of groundwater reserves. It should also be pointed out that urban water use has priority over agriculture in SWP contracts.

What is needed in respect to the issue of SB 200 is to put all of these demand, supply and insurance facts in perspective for a rational decision that finally balances cost and risks. Unfortunately, the facts are not easily determinable. But they can be assembled in the form of reasonable approximations.

The principal recipient of state water in Southern California is the MWD. At present the district uses about 2.4 MAF of water for urban purposes and 0.6 MAF for agriculture. The district estimates that demand will rise by the year 2000 to 3.6 MAF, of which 3.2 MAF will be urban and 0.4 MAF will be agricultural. Thus, MWD forecasts an increase in demand, overall, of 600,000 AF by the year 2000.

An examination of the assumptions underlying these estimates raises some questions. First, while the population within MWD is estimated to rise by 25%, from 12 million to 15 million people, the urban use of water is assumed to rise one-third more rapidly, or by 33%. Is this reasonable? Due to many factors, not the least of which is the extraordinary cost of individual suburban dwellings in relation to personal incomes, the trend toward apartment and condominium living should be accellerated, with smaller individual lawn, swimming pool, etc. needs. Thus, one would logically expect smaller per capita usage rather than significantly greater use. Moreover, the legal requirements for water efficiencies incorporated into new building codes and practices should reduce per capita

consumption. MWD has annexed a great deal of new suburban properties in recent years. Is that trend with its high per capita water requirement likely to continue? The Task Force believes these are legitimate questions.

According to testimony from the former MWD economist, John Burnham, the savings in urban usage alone should restrict growth in water requirements to 3.25 MAF, not 3.6 MAF. Burnham also believes that if water rates were set to cover full costs, consumption would be reduced by about 15%. These factors could reduce projected demand in MWD by 800,000 AF, more than the DWR estimate of yield from the Peripheral Canal. In addition there could be savings from pricing and other reforms which could reduce existing inefficiencies.

Taking into account the prospective loss of water to the Central Arizona Project after 1985 there would still be a surplus in normal years. The only problem would be a dry year or prolonged critical dry period. MWD points out that if 1990 is a dry year there will be a shortage. In this event, states Burnham, the district could draw down its various reserves. He still does not believe that it is likely that both the Colorado River and the California Water Project would necessarily experience dry periods simultaneously. But if this were the case, the reserves could be used in an insurance manner. They could be replenished subsequently with surplus water.

This raises another fundamental issue. Why should not surplus water be stored rather than sold at very cheap rates? It could be sold at regular prices which would benefit project revenues and help avoid unnecessary project construction. It would assist in reducing the overdraft in the San Joaquin Valley.

Unless additional water supplies are made available to the San Joaquin Valley, one of two things will result. Either groundwater levels will continue to drop, with consequent increases in the cost of groundwater pumping, or substantial acreage will be taken out of production. Some combination of these alternatives is most likely.

A recent study by MWD states that 438,000 AF of water can be saved from the Salton Sea with a number of corrective actions. How this can be made available for exchange or sale outside the Imperial Irrigation District is not presently clear. But it is a substantial resource to be considered.

If greater emphasis were to be placed on dry year insurance plans, the question remains as to whether in a dry year or dry years there are reserves in groundwater basins or surface storage sufficient to carry the regions in Southern and Central California over the dry period. There is no doubt that there is a great deal of physical capacity for groundwater storage and there is surplus water, but it also must be recognized that there are significant problems in distributing water to where

it is needed. In part this is a physical problem, but at the same time there are legal and institutional barriers to the distribution and management of water. The issue is thus in some measure the will to make legal and institutional changes as opposed to relying so heavily on a costly engineering resolution of the problem.

In addressing the concept of an insurance plan for dry years, the 1976-1977 years provide a good basis for analysis. Those years were the driest in the State's history. The severity of that dry period is illustrated by the following 1977 conditions:

- - 1977 was the driest year in California weather records, following the 1976 dry year.
- - Statewide, runoff from October 1 through March 31 was 18% of average.
- - State Water Project agricultural entitlement water deliveries were reduced 60%.
- - CVP deliveries were reduced to between 25-75% of normal.
- - Groundwater use was increased to meet certain area needs.
- - Agriculture, which suffered most, and under the contracts is the first to have water deliveries reduced, suffered from $0.5 to $1.5 billion in drought losses.

The 1977 Report of the Governor's Drought Emergency Task Force stated that if a local area could reasonably be expected to have a 1978 water supply capable of producing 75 gallons per day per person (about half of normal minimum usage) and 75 percent of 1976 use for governmental, commercial and industrial purposes, a state action contingency plan would not be needed.

Similarly, the consumption reduction goals of Mayor Bradley's 1977 Blue Ribbon Water Conservation Committee varied depending on increasing potential severity, from 10 percent to 25 percent.

These state and local approaches to severe drought are useful for comparing acceptable losses and sacrifices with the cost of construction of additional projects. In a recent speech by the Manager of the MWD, the potential deficiency in the year 1990, assuming that it is as dry as the driest year in California's history, would be on the order of 23% of normal supply to the district. By the standards cited above this is not an unreasonable hardship or risk for the rare extreme drought years.

If Southern Californians could be assured that only the degree of shortage cited by the MWD manager would be experienced, the insurance risk is reasonable. This example does not fit, however, the situation which might be experienced in another severe drought if growth and groundwater overdraft continues.

This "extremely dry period" problem needs far clearer explanation than has been offered to date. The loss to agriculture needs careful assessment. At the same time, the rationale for continuing surpluses and cheap water in normal years, with no real inducement for conservation measures in the occasional dry cycles, seems unwarranted in relation to costs.

ALTERNATIVES

Throughout the majority of the Task Force hearings, the testimony centered on SB 200 and the Peripheral Canal. However, from many quarters there was insistence that other feasible alternatives are available. As the charge of this Task Force included an investigation of possible alternatives, extensive testimony was heard on "The Orlob Plan." This plan is an update of through-delta conveyance proposals that employs the same general concept as many other plans which utilize the existing natural delta channels.

The Orlob Plan is designed to accomplish the same purpose as the Peripheral Canal. The current problem is that as water is pumped out of the Delta by the CVP and SWP during dry periods, reverse flows are created in some delta channels, which have adverse effects on water quality and the fisheries.

Specifically, Sacramento River natural flows and water released from project storage during dry periods now travels down the

Sacramento River out to the western edge of the Delta. There it is pulled backwards by the pumps around the end of Sherman Island and in effect travels upstream in the San Joaquin River system for eventual export at Tracy. This reverse flow creates a pull on the more saline waters of the San Francisco Bay system, and water export quality and fisheries are threatened. Under the existing system, the only method of correcting this problem is to release greater and greater amounts of fresh "carriage" water to repel the salt water.

The Peripheral Canal proposes to solve this reverse flow problem by routing Sacramento River water through a new canal around the eastern periphery of the Delta. The Orlob Plan proposes to solve such problems by routing the Sacramento River water through the natural waterways in the middle and eastern sections of the Delta. The plan involves a short canal in the northern part of the Delta from the Sacramento River into the forks of the Mokelumne River in the interior Delta. From there channels are widened, deepened, dredged, and levies strengthened as needed to provide hydraulic capacity to move water south to the pumps at Tracy.

This conveyance system is designed to eliminate all the reverse flows which require "carriage" water and hence provide essentially the same yield of water for export as the Peripheral Canal.

The Task Force has heard voluminous testimony on the Orlob Plan, and although detailed planning for the plan is not as far along as for the Peripheral Canal, has concluded that the concept of the plan appears to be feasible and could be more easily constructed.

The Task Force has also concluded that the Orlob Plan would have significant advantages over a Peripheral Canal in that it could be constructed in a much shorter period of time, would cost substantially less, and is supported by the Delta area farmers who remain a serious obstacle to construction of a Peripheral Canal.

A drawback to the Orlob Plan, according to the Department of Fish and Game, is that the plan does not accomplish the same degree of benefits for fish and wildlife as the Peripheral Canal. However, as the Department of Fish and Game has stated, the Orlob Plan would be a significant improvement for fish and wildlife over the continuation of the status quo.

The Task Force is aware of the argument that rejection of Proposition 9 and the Peripheral Canal could effectively halt water development and the completion of the State Water Project. This argument has been advanced as a major problem with the Orlob Plan on the grounds it has no political momentum or implementing authority. This is a misconception. The Orlob Plan or any other through-delta facility selected by DWR was

authorized by the Burns-Porter Act by vote of the people in 1960. That authorization and authority still stands and rejection of SB 200 would not affect it.

The Orlob Plan, when compared with the Peripheral Canal, is a substantially cheaper and quicker method of conveying water for export across the Delta. Under existing laws, both the Peripheral Canal and the Orlob Plan would have essentially the same yield.

The Task Force, therefore, concludes that the consideration of an alternative through-delta approach offers an opportunity to meet necessary water export requirements at substantially lower costs and shorter water delivery times, with no determinably greater environmental risks than the Peripheral Canal.

Finally, the Task Force is not unmindful of the testimony of Senator Omer Rains, Chairman of the Senate Judiciary Committee, concerning the host of legal issues inherent in the nature of the issue and the special contingent features of SB 200. These may take years to resolve in both state and federal courts.

FINAL CONCLUSIONS

One of the elements which makes a decision on Proposition 9 difficult is the fact that the Peripheral Canal and some other

facilities can be built under existing law (Burns-Porter Act) even if SB 200 is defeated. So why vote?

SB 200 and ACA 90 were intended to modify the existing authority to require stronger protective measures for the North Coast rivers, the Delta, and the San Francisco Bay region and to prohibit the Legislature from reducing Delta protection. A majority vote of the people would be needed to change those protections or others granted in SB 200 and ACA 90.

With these environmental "protections", those who believe that the Canal will take too much water out of the Delta or fear that Southern California will ultimately take increasingly damaging amounts, are in a difficult position. They are forced to believe that a negative vote on the Canal will dissuade a future administration from building it. But at the same time they risk losing the stronger, although by no means dependable, protective measures in SB 200 and ACA 90 in the event that the Canal is in fact built despite a no vote.

The difficulty for persons who want to have water exported South is that while SB 200 mandates immediate construction of the Canal, there are a number of barriers which are all substantial in nature. There are the conditions established by the terms of SB 200. There is the possible inability to fund the project because the three major elements of funding - -

project revenue surpluses, tidelands revenues and revenue bonds - - are all questionable.

Three conditions in SB 200 are quite possibly unattainable, at least for the near future. SB 200 requires two agreements with the Federal government before the Canal can carry water for the CVP. There must be a federal statute or a permanent contract to permit use of CVP water for maintenance of the water quality standards in the Delta. However, a recent Bureau of Reclamation letter reaffirms the Federal position not to allow federal water to be controlled by state standards, in part for economic reasons - - it wishes to sell the water to meet its own contract obligations. A second required agreement prior to commencing construction is one which permits use of CVP water to meet "historical" fish levels. In view of the negative appraisal of the Fish and Wildlife Service of the potential success of the fish screens and export effects, this may prove difficult. The final decision on this is, however, by the Bureau of Reclamation, a water development agency which may well have differing priorities than the Fish and Wildlife Service.

The questions surrounding failure to achieve an agreement on the wheeling of CVP water through the Canal are of significance both to those who seek environmental protections and those who seek increased water exports. There are good reasons why SB 200 requires such a permanent agreement. It is not primarily

an issue that the state will be carrying federal water at no cost to the latter. More important, doing so without a federal statute or permanent contract to use that water to maintain Delta standards imperils the Delta standards in times of dry or critically dry periods and similarly imperils the export of water south.

If the state water is required to carry the full burden of maintaining quality standards in the Delta, from which both federal and state water have been substantially removed to be placed in the Canal, the result could be disastrous to both Delta and export interests. How can the state's half of the water in the Canal do the job of maintaining standards alone, and still have more water to export south to SWP contractors in dry years?

If the Canal is built it is absolutely essential that an agreement be reached with the federal government on use of CVP water to help maintain Delta standards. DWR insists the federal government will not hold to its current negative position, and in any case proposes to transport CVP water despite the language in SB 200 requiring an agreement prior to carrying water "for" the CVP, (on the grounds that it is water "of" the CVP).

There is the further condition that after two years of testing the fish screen, the DWR and DFG must agree that the results

will restore and maintain historical fish and wildlife standards. It may well be, in view of the vague definitions of historical levels permitted to be established by DFG, that these are almost certain to be approved. This is a reasonable assumption in view of the fact that one-half billion dollars will have already been spent on the Canal. Such approval would allow construction to proceed, but it does not assure the actual success of the fisheries features. The approval of a dubious solution for the fish screens could well lead to years of adjustments to a costly and unsuccessful screen while the salmon industry deteriorates and other species decline. On the other hand, if the fish screen is not approved the partially completed project may be both legally and functionally inoperable within the terms and intent of SB 200.

The Task force, after a thorough investigation, concludes that the State of California and the electorate cannot be assured that Proposition 9 (SB 200) solves the state's environmental problems or water needs, as they may exist with respect to the State Water Project, in an economical and timely manner. The total SB 200 cost and financing cannot now be defined with certainty. The cost of water to the ultimate user cannot now be specifically calculated. The Task Force concludes that a reasonable alternative to the Peripheral Canal is available and can be pursued within existing authority to proceed.

The Task Force believes that the contents of its Report will be helpful to the voters in making an informed decision on Proposition 9.

Findings of the Task Force on California's Water Future

1. The Task Force and the Issues

The Task Force on California's Water Future was established in October, 1981, as part of the Commission for Economic Development. The Task Force has studied Senate Bill 200 and ACA 90 (Proposition 8 of November 1980) and how they affect California's water future. SB 200 provides for additional State Water Project facilities, including the Peripheral Canal. SB 200 and ACA 90 together place substantial restrictions and conditions on construction of additional State Water Project facilities and State Water Project operations.

The Peripheral Canal is extremely controversial. Immediately after SB 200 and ACA 90 were enacted by the Legislature in 1980, a referendum measure was qualified for the ballot. The people will vote on Proposition 9 on June 8, 1982, to approve or disapprove SB 200. Since ACA 90 will have no effect if SB 200 is rejected, the referendum vote is also a vote on ACA 90. There have been extreme discrepancies in the information distributed by opponents and proponents. This has been particularly true of costs and environmental impacts.

The Task Force was established to address questions that have been raised concerning SB 200 and ACA 90 and to provide the voters with information they can use to better judge how they should vote on the SB 200 referendum. The Task Force was asked to study the need for additional water project development, the costs of water development, who will pay those costs, the

feasibility of financing water development, alternatives to the SB 200 facilities, the costs and benefits of those alternatives, the adequacy of the environmental protections contained in SB 200 and ACA 90 for Northern California and Delta concerns, the potential for conservation and other alternatives to new water development projects, and fiscal, environmental, and fisheries issues related to SB 200 and alternatives. The Task Force has held a series of public hearings in Sacramento, San Francisco, Los Angeles, Fresno, and San Diego.

The Legislature enacted SB 200 in 1980. It would have become effective January 1, 1981, if the referendum had not been qualified for the June ballot. SB 200 is extremely complicated in terms of authorization and mandates. SB 200 does three things which are all discussed at length in the body of this report: (1) It provides for specific State Water Project facilities and programs, including a Peripheral Canal; (2) It places substantial restrictions and conditions on construction and operation of those facilities; and (3) It contains a number of provisions not directly related to specific facilities which concern State Water Project operation and cost allocations.

ACA 90 was approved by the voters as a referendum measure in November 1980, and will become effective if SB 200 takes effect. ACA 90 places in the California Constitution certain provisions in SB 200 for the protection of fish and wildlife in the Delta and Delta water rights, and makes it more difficult to develop north coast rivers. [See discussion of ACA 90 at Section 6, below.]

SB 200 is often referred to as the "Peripheral Canal Bill" since the Peripheral Canal is the most controversial feature of SB 200 and would be at the heart of the state and federal export projects. SB 200, however, includes many facilities besides the Peripheral Canal and numerous provisions pertaining only to those other facilities. The Peripheral Canal also accounts for about one-fourth of the construction cost of the facilities and programs enumerated in SB 200, at current cost estimates.

The facilities provided for in SB 200 are intended to develop additional water for the San Joaquin Valley, certain coastal areas, and Southern California. The principal factors cited as prompting a demand for new water are a continuing and serious overdraft of groundwater basins in the San Joaquin Valley and a potential major reduction in Southern California's Colorado River entitlements beginning in 1985. SB 200 envisions a many-faceted water program along with the Peripheral Canal, including new surface reservoirs, groundwater basin storage, water reclamation, and water conservation. Provisions in both SB 200 and ACA 90, designed to protect Delta agriculture and meet environmental concerns as well as to protect the wild rivers to the north, are linked to SB 200's export provisions.

The Peripheral Canal was chosen as the Delta project to be built because it was believed that it would best correct existing fishery and reverse flow problems. As water is pumped out of the Delta by the Central Valley Project and State Water Project during dry periods, reverse flows are created in some

Delta channels, which have adverse effects on water quality and fisheries.

The Peripheral Canal, approximately 42 miles long, 400 to 500 feet wide and 20 to 30 feet deep, would take water from the Sacramento River at Hood and carry the water around the east side of the Delta to the Clifton Court Forebay. Transferring water in a canal isolated from existing Delta channels would protect exported Sacramento River water from quality degradation and would provide additional water for export.

Meeting the Delta requirement contained in SB 200 is not simply an engineering task of capturing fresh water from the north and sending it south. The inclusion in ACA 90 of extensive protective measures for the north and the Delta and the numerous required studies, contracts, and decisions provided for in SB 200 attest to perceived risks in the venture. Beyond this are the unknown factors of eventual costs, resulting water price increases, and dates for ultimate delivery of water.

The Task Force has been assured that millions of dollars have been spent on planning and design, but there remain significant unanswered questions about the project. It has been the objective of this Task Force to identify both the critical known facts and the uncertain features of SB 200. The Task Force has attempted to obtain from the most qualified sources available to it in the brief time prior to the June election the information needed to evaluate these facts and uncertainties.

In attempting to assess the validity of the SB 200 water export plan, the Task Force came to recognize the need to

review not only the engineering features of the Peripheral Canal, but also to compare its costs and benefits with alternative Delta transfer proposals. Similarly, the Task Force investigated the potential for increased conservation of water through more effective laws, economic policies, and operational practices. To the extent that legal, economic, and water use reforms can conserve water already developed, the size and cost of the projects in SB 200 might be reduced and less costly approaches might be found to be preferable. The purpose of this report is to seek answers to those questions which best put these issues in perspective and which deal most directly with the least costly, most efficient, and environmentally safest opportunities for assuring that needed water is available.

2. History of the Problem of Moving Water Through the Delta for Export

A. The Long History of Alternative Delta Transfer Plans

The Federal Central Valley Project (CVP) and the State Water Project (SWP) are massive projects which divert water from Northern California rivers, through the Sacramento-San Joaquin Delta, primarily to the San Joaquin Valley and Southern California. The Delta has always been a "bottleneck" limiting operation of those projects.

For over 40 years, alternative ways of moving Sacramento River water past the Delta, either around or through it, have been studied. The SB 200 Peripheral Canal plan is the first specific Delta transfer plan to be approved by the Legislature and subject to a popular vote. SB 200 is the product of intensive debate and complex compromise.

The Delta as it exists today is not a natural area. In the 1,100 square mile Delta, over 60 islands have been reclaimed. Extensive levees have been constructed and the islands intensively farmed. Over 700 miles of channels and sloughs lie between the reclaimed islands. Water flowing down the Sacramento and San Joaquin Rivers and other tributaries moves through the channels and sloughs and is either used in the Delta, exported, or flows on to San Francisco Bay.

The fresh water that flows out of the Delta mixes with salt water from San Francisco Bay. There is always water physically available in the Delta, but the quality of that water depends on fresh water outflows. Whatever affects Delta outflow affects Delta water quality and salinity intrusion. Upstream diversions and Delta exports have steadily increased and average annual Delta outflow has steadily decreased.

As early as the 1860's, proposals were made to build physical barriers at various points to stop salt water intrusion, but such barriers have always been rejected as too expensive and as harmful to fisheries and navigation. Instead, upstream CVP and SWP reservoirs have been used to release stored water to create an "hydraulic barrier" of fresh water outflow to control salinity intrusion. Delta water quality standards have been set by the State Water Resources Control Board for the Delta which require the CVP and SWP to operate their facilities to provide releases necessary to meet the standards. The CVP has stated that it will not meet the standards in dry and critically dry

years, such as 1976-1977. This question is now being litigated. [See discussion at 2B below.]

The Sacramento River contributes a much greater proportion of flows into the Delta than the San Joaquin River, and the extent of saline intrusion has been proportionately greater in the San Joaquin Delta than in the Sacramento Delta. Saline water also tends to remain in the San Joaquin Delta longer. Noting the hydraulic relationship between the two river deltas, studies were made of possible ways to modify Delta channels to allow more Sacramento River water to reach the San Joaquin Delta. If no modifications had been made, most of the Sacramento River water would have had to flow down the Sacramento River, around the end of Sherman Island and back up the San Joaquin River to the export pumps.

In 1950, the CVP 4,600 CFS capacity pumps at Tracy began operation. It was clear immediately that the Delta was not a fully effective conduit to move fresh water to the CVP pumps. In periods of low outflow, the pumps were strong enough to pull water back around Sherman Island, the westernmost Delta island, upstream to the pumps. The San Joaquin River flowed backward. The overall effect was to pull salt water along with the fresh water back to the pumps.

The solution to these problems was to modify the existing Delta channel configuration to make it function more as a river than a lake by building the Delta Cross-Channel at Walnut Grove (30 miles south of Sacramento). The Delta Cross-Channel diverts Sacramento River water to the Mokelumne River and

Georgiana Slough, 30 miles across the Central Delta to the CVP Tracy pumps. It was constructed in 1951, shortly after the Tracy pumps went into operation. It is 4,200 feet long, with capacity to carry 5,000-6,000 CFS, approximately the flow of water required by the CVP pumps.

During the course of studying the Delta Cross-Channel in the 1940's, various alternatives were studied, including a closed system cross-channel hydraulically isolated from the poor quality San Joaquin flows. The Bureau of Reclamation rejected that precursor to the Peripheral Canal at the time as too expensive to build and maintain, although it was strongly favored by the California Department of Fish and Game (DFG).

Study continued of methods of moving water across the Delta and of separating Sacramento River water from poorer quality San Joaquin River water and salt water. The list of alternatives which have been suggested over the years is long. Some plans have included flood control features.

The SWP Burns-Porter Act was approved by the voters in 1960. That Act did not specify what "Delta Water Project" would be built. Plans for the Delta were incomplete in 1960, and the Act consequently was vague, authorizing as part of the SWP:

> "Master levees, control structures, channel improvements, and appurtenant facilities in the Sacramento-San Joaquin Delta for water conservation, water supply in the Delta, transfer of water across the Delta, flood and salinity control, and related functions. [Water Code §12934(d)(3).]

Soon after the 1960 election, the Department of Water Resources (DWR) published the Preliminary Edition of Bulletin 76,

"Delta Water Facilities." The first Bulletin 76 described three alternatives: (1) The "Single-Purpose Delta Water Project" which would have moved water to the pumps through Delta channels, with some channel closures to protect commingling with poor quality flows, and would have included substitute irrigation supplies to the Western Delta and no flood control benefits; (2) The "Typical Alternative Delta Water Project" which was a more extensive plan with master levees for flood control in the Central Delta; and (3) The "Comprehensive Delta Water Project" which included more extensive master levees, increased flood control, and seepage control, recreation, and transportation benefits. All the alternatives were found to be "functionally feasible", but the Comprehensive Project was not financially feasible unless local beneficiaries contributed to the Project's flood and seepage control features. The Single-Purpose Project had the best benefit-cost ratio, and DWR recommended:

> "That the Single-Purpose Delta Water Project be adopted as an integral feature of the State Water Resources Development System and that other economically justified facilities for local flood and seepage control, transportation, and recreation benefit be incorporated, if these facilities are requested by local authorities and agreements are made for repayment of the reimbursable costs involved."

DWR's recommendations were strongly opposed by boating interests, because of channel closures, and by fish and wildlife agencies, among others.

In renewing its efforts, a second phase of study began with the formation, in late 1961, of the Interagency Delta Committee (IDC), consisting of the Department of Water Resources,

the Bureau of Reclamation, and the Corps of Engineers. In 1963, the Bureau of Reclamation introduced the Peripheral Canal concept as an alternative, based on earlier plans for an hydraulically-isolated version of the Delta Cross-Channel.

The IDC recommended construction of a Peripheral Canal in its final Plan of Development, Sacramento-San Joaquin Delta (1965). The 1965 version of a Peripheral Canal would have had an intake capacity of 21,800 CFS to supply 10,300 CFS to the SWP, 8,000 CFS to the CVP, and to release 3,500 CFS into Delta channels. Overland irrigation supplies for the Western Delta and other provisions would have been made to offset the expected decreased water quality in the Western Delta. A Peripheral Canal was viewed as beneficial to fisheries. The Contra Costa County Water Agency vigorously opposed the Canal, but other groups supported the Peripheral Canal at least conditionally.

Opposition to a Peripheral Canal substantially increased over the next 10 years. In 1969, the Bureau of Reclamation released a feasibility report which DWR concurred in and which the U.S. Fish & Wildlife Service approved on the condition that an efficient fish screen could be developed. The Bureau of Reclamation report recommended the Peripheral Canal be a joint SWP-CVP facility, with costs shared equally. In 1974, DWR released a 600-page draft Environmental Impact Report on the Peripheral Canal recommending that it be a joint-use facility. The draft Environmental Impact Report was widely and vigorously opposed.

1975 marked the beginning of the third phase of study of Delta plans. DWR began another reappraisal of the Peripheral Canal and other Delta alternatives. A three-phase planning process identified the 3 "most competitive" Delta water transfer facilities: (1) the New Hope Cross-Channel--South Delta Intake Channel; (2) the New Hope Cross-Channel--Enlarged Clifton Court Forebay; and (3) the Peripheral Canal. Thirty alternative physical facilities were studied: 5 "existing channel conveyance alternatives", 11 "modified channel conveyance alternatives", 7 "isolated channel conveyance alternatives", 2 "modified and isolated channel conveyance alternatives", and 4 "physical barrier alternatives." The concept contained in the Orlob Plan (discussed in Section 7, below) is similar in concept to many of these Delta alternatives, although it was not specifically considered.

This third phase of study emphasized two apparently equally important reasons for needing a Delta water transfer facility: "to correct adverse environmental conditions in the Delta associated with the present method of conveying water through the Delta for the SWP and CVP and to help meet increased needs of the projects." The Peripheral Canal identified by DWR in 1976, was included in Senator Ayala's SB 346 in 1977, and eventually in SB 200.

B. Delta Water Quality Standards

The State Water Resources Control Board (SWRCB) has set water quality standards for the Delta which directly affect

operation of the SWP. The SWRCB's standards and Delta water quality control plan have been challenged in court.

The SWRCB's position is that its water quality standards must be met before any water is exported from the Delta for any purpose. The federal CVP has generally been operated to meet SWRCB standards, but only as a matter of comity. The CVP stated, however, that it will not meet the standards in dry and critically dry years, such as 1976-1977. This question is being litigated. [See discussion in Section 5E(2), below, on the effect on expected yield of the Peripheral Canal of the federal government's failure to operate the CVP in accordance with SWRCB standards.]

SB 200 requires the SWP to meet water quality standards, "including rectifying failure of the United States to operate the federal Central Valley Project in accordance with such standards". [Water Code § 11460(b).]

The SWRCB has the statutory authority to set Delta water quality standards to protect beneficial uses of Delta water supplies. This authority has two aspects. The SWRCB has retained jurisdiction over SWP and CVP water rights permits. In 1978, the SWRCB issued Decision 1485 which amended CVP and SWP permits by revising permit terms and conditions for salinity control, fish and wildlife protection, and to coordinate the different permits' terms and conditions. Decision 1485 has been challenged in court, although its use has not been enjoined.

The second aspect of the SWRCB's authority is the authority to adopt a water quality control plan (Delta Plan),

pursuant to both federal and state water quality control statutes, containing water quality standards for the protection of beneficial uses of the Delta and Suisun Marsh. It adopted its Delta Plan at the same time it issued D-1485. DWR's operation of the SWP to comply with the Delta Plan has also been challenged in court.

The result is a single set of water quality standards, except that D-1485 (the water rights decision) includes only the standards from the Delta Plan "for which a project mitigation responsibility . . . can be shown . . . ." D-1485 does not contain South Delta water quality standards for agriculture since the project facilities over which the SWRCB had permit jurisdiction did not appear to the SWRCB to have a direct impact on water quality conditions in the South Delta. The SWRCB did not have before it the CVP San Joaquin Valley permits, and it is operation under those permits that has been a major cause of decreased flows and water quality degradation in the San Joaquin River.

The SWRCB classified historical Delta beneficial uses in three categories: (1) fish and wildlife; (2) agriculture; and (3) municipal and industrial uses, and established water quality standards for each category. The standards include adjustments in water quality for different hydrologic conditions experienced in different types of water years.

The "underlying principle" of the Decision 1485 standards is that:

> ". . . water quality in the Delta should be at least as good as those levels which would

> have been available had the state and federal projects not been constructed, as limited by the constitutional mandate of reasonable use."

And, of "controlling importance" to the SWRCB's water rights decision and Basin Plan is the Delta Protection Act.

The Delta Protection Act (Water Code §12201, et seq.) affirms the importance of both maintaining "an adequate water supply in the Delta sufficient to maintain and expand agriculture, industry, urban, and recreational development in the Delta" and "to provide a common source of fresh water for export to areas of water deficiency. . . ." Providing salinity control for the Delta and an adequate water supply for Delta water uses is made a function of the SWP. The Act declares that it is state policy that no water shall be diverted from Delta channels "to which the users within said Delta are entitled". If it is in the public interest to provide substitute overland water supplies to Delta users in lieu of providing salinity control, "no added financial burden shall be placed upon said Delta water users solely by virtue of such substitution." Finally, the Act sets the basic Delta protection policy:

> "In determining the availability of water for export from the Sacramento-San Joaquin Delta, no water shall be exported which is necessary to meet the requirements of Sections 12202 and 12203 of this chapter."

In D-1485, the SWRCB interprets this policy:

> "The Delta Protection Act accords first priority to satisfaction of vested rights and public interest needs for water in the Delta and relegates to lesser priority all exports of water from the Delta to other areas for any purpose."

The SWRCB asserts the D-1485 standards "must be maintained as first priority operating criteria for any and all projects or parts thereof that may be constructed and operated under the permits" subject to SWRCB jurisdiction. It must be noted, again, that both D-1485 and the Delta Plan are being challenged in numerous lawsuits.

The SWRCB noted in D-1485 that water quality standards for fish and wildlife do not re-establish "without project" levels of protection for Delta fisheries, since "to provide full mitigation of project impacts on all fishery species now would require the virtual shutting down of the project export pumps." However, the SWRCB concluded that D-1485 provides a "reasonable level of protection until final determinations are made concerning a cross-Delta transfer facility or other means to mitigate project impacts."

SWRCB representatives explained at a Task Force hearing that the SWRCB's present standards don't take the Peripheral Canal into account. When the SWRCB opened its Delta hearings in 1976, it was uncertain what Delta transfer facility DWR and the Bureau of Reclamation would decide to build. The SWRCB consequently decided to develop a "near-term plan" and to wait to develop permanent standards. The Peripheral Canal would substantially change interior Delta flow patterns and the SWRCB will have to re-evaluate its standards if the Peripheral Canal is built. The D-1485 hearings will be reopened in 1986, or sooner if necessary.

3. DWR's Peripheral Canal

The provisions of SB 200 do not expressly prescribe the scale of the Peripheral Canal facilities to be built. DWR Bulletin 132-81 provides DWR's statistics on the Peripheral Canal. The Canal would be an unlined ditch, approximately 42 miles long, around the eastern edge of the Delta from Hood to Clifton Court Forebay. SB 200 requires that it be built in 3 stages: (1) Stage 1 from Hood to Shima Tract (24 miles); (2) Stage 2 "preconsolidation" (preparing the soil for construction) from the San Joaquin River to Clifton Court Forebay; and (3) Stage 3 completion of the Canal from Shima Tract to the Forebay (18 miles). DWR now estimates that Stage 1 will be completed and operational by 1989, and Stage 3 by 1994.

The Canal would be between 400 and 500 feet wide and between 20 and 30 feet deep. Rights-of-way to 6,570 acres would have to be acquired, 13 roads and 1 railroad line would have to be relocated, and other utilities such as the Mokelumne Aqueduct would be affected.

Siphons would be constructed to carry Canal water under the natural watercourses that it would cross. Siphons which have 25 feet by 25 feet cross-sections would be built at the Mokelumne River (630 feet long), Disappointment Slough (540 feet long), and the San Joaquin River-Stockton Ship Channel (800 feet long). A slightly smaller siphon (22½ feet by 22½ feet cross-section) would be needed at Old River (500 feet long).

The capacity of the intake from the Sacramento River at Hood would be 21,800 cubic feet per second (CFS). Fourteen

release points along the Canal would have a physical capacity to release a total of 9,800 CFS, 5,600 CFS along the first 24-mile stage, 4,200 CFS along the remaining 18 miles. (Although there would be the physical capacity to release 9,800 CFS, DWR could release only 6,300 CFS at full export pumping rates.)

The Hood pumping plant would be installed in 2 stages. Two pumping units, with 5,450 CFS combined capacity, would be installed in conjunction with construction of Stage 1 of the Canal. Six additional pumping units would be added at completion of the entire Canal, to reach the ultimate planned 21,800 CFS capacity.

A fish screen would be installed at the Hood intake. Stage 1 of the Canal would be operated for two years "to establish adequate fish screen and operation criteria." The final 18 miles of the Canal would be completed only when the Directors of DWR and DFG "both determine from the results of the trial period that the fish screen and operational criteria will adequately protect fish populations".

The fish screen that will be tested during the 2-year trial period would have a 5,450 CFS capacity. The capacity of the fish screen for the completed Canal would have a 21,800 CFS capacity, nearly four times the capacity of the screen which would be tested for two years. [The fish screen is discussed in more detail at Section 8B, below.]

DWR estimates that since 1963, it has spent $20 million on planning and design related to the Peripheral Canal and an additional $42 million on Delta planning in general. DWR has

completed all preliminary design work, including exploration, mapping of the Canal alignment, and preliminary contact with affected utilities. It is ready to begin final design work and contract drawings. DWR expects to be able to handle all engineering problems involved, including construction of the siphons. DWR planning will include provisions for landscaping and substantial recreational use of the Canal area.

4. The Fisheries Questions

The operation of the SWP and CVP, and in particular the export of water out of the Delta, has contributed substantially to the decline of Delta fish and wildlife resources. Project operation has reduced the outflow of fresh water from the Delta at some times of the year and has changed the velocity and direction of flow in Delta channels during some times of the year. DFG has stated that the present project operation is not satisfactory for fish and wildlife in the Delta.

The Department of Fish and Game uses the magnitude of damage to striped bass to estimate general damage to fisheries. DFG has determined that striped bass survival between 1968 and 1976 has averaged only about 60% of "recent historical survival (estimated 1922-1967 average)", and that this decrease in survival is due to a "combination of the diversions from the South Delta and sometimes inadequate fresh water outflows."

DFG reported to the SWRCB in 1981, that there are additional factors which are affecting the abundance of young striped bass in the Delta. DFG has determined that young striped bass populations since 1976 have been well below the levels that

had been predicted. The predictions were based on the relationship between flow and population used to set Delta Basin Plan standards. The new factors include "physical effects" (flows, diversions, temperature, etc.), food supply, egg production, mortality rates (fishing and non-fishing), and toxic pollutants. DFG is investigating these new factors further.

The U.S. Fish & Wildlife Service agrees with DFG that there are serious adverse effects on fisheries resulting from cross-Delta water transport:

> "Pumping confuses migratory fish by reversing stream flow. The pumps draw juvenile fishes out of Delta waterways. As many as 80 million young striped bass are lost annually as are 6.5 million salmon and 4 million to 5 million shad. In addition, the salinity regime of the Delta has been altered, causing habitat changes of immense proportions in an area that serves as nursery and rearing habitat for many of the fishes that are harvested throughout the state . . .".

The DFG and the U.S. Fish & Wildlife Service compose the main fishery agencies for the state and federal government and have both expressed positions on the Peripheral Canal. The Service has taken the position that: "A Peripheral Canal, properly designed, efficiently screened, and operated in accordance with criteria developed by fishery scientists, has the potential to improve existing conditions in the Delta for certain species of fish."

The Service advises, however, that its endorsement must be considered in light of what it refers to as "real world facts":

> "1. Screens are never as effective or reliable as planned.

2. Present water quality standards are inadequate to protect the fisheries of either the Delta or San Francisco Bay.

3. Water quality standards may be reduced, and in-basin fishery needs may be forgotten, as pressures build for greater diversions from the Delta.

4. Additional export from the Delta is not likely to help San Francisco Bay, and it certainly won't help the Delta.

5. There will be impacts, not necessarily beneficial, associated with developing the additional water for export south of the Delta.

6. There will be impacts, probably adverse, associated with increased agricultural, municipal, and industrial development in the San Joaquin Valley and Los Angeles Basin resulting from increased exports from the Delta.

7. Additional exports south of the Delta will generate more dirty drain water coming back to the Delta."

The Service's conclusion is that increased Delta exports, which will be facilitated by building the Peripheral Canal, will be "high risk activity for both fish and wildlife". The Peripheral Canal could be an improvement over the present system or any other cross-Delta facility "if it is not used to export more than 5 million acre-feet of water annually from the Delta", but if exports are increased above current levels, the potential benefit of the Peripheral Canal will be reduced. Even though actual current exports are in excess of 5 million acre-feet now, the Service has stated that the Canal would be better than a "non-isolated facility".

DFG believes the Peripheral Canal will improve Delta fisheries, and will provide more improvement than any through

Delta alternative. By isolating water for export from the estuary and redistributing Delta inflow by releasing water from the Canal into the interior Delta, reverse "upstream" flows in Western and Southern Delta channels except Middle River would be eliminated and downstream flow directions would be restored. [See discussion at Section 7E, below.] DFG also believes that a Peripheral Canal would protect the Delta nursery area for striped bass and other fish. The export pumps would no longer draw fish out of their natural migration routes or reduce invertebrate populations in the Delta.

Fish that spawn above the proposed Peripheral Canal intake at Hood create a problem which possibly can be protected only by limitations on diversions at certain times of the year. A large majority of the striped bass, salmon, steelhead, sturgeon, and shad spawn above the Peripheral Canal intake, and their young migrating down the Sacramento River may be too small to be screened effectively at the intake. DFG estimates that the migrating striped bass young would pass the screens in less than thirty days and that substantial reductions in water export during that time would be a feasible means of protecting them. It believes a screen could be constructed at the intake to keep young salmon and shad out of the canal. [See discussion of the fish screen at Section 8B, below.]

DFG has taken the position in the past that complete fish screen studies should be made before the Peripheral Canal is built. SB 200, however, allows Stage 1 to be built before testing is completed. The serious situation that would exist if

DFG were to determine that the screen was not adequate after the fish screen had been tested in place for 2 years after Stage 1 was built is discussed in Section 8B.

DFG has also analyzed non-isolated cross-Delta conveyance systems which are alternatives to the Peripheral Canal. DFG contends that all of the non-isolated systems would be better than the status quo, but would only partially alleviate present fishery problems. According to DFG, through-Delta alternatives would improve some flow reversal problems, but would not take care of reverse flow problems in the South Delta, and could create higher velocities in Delta channels. However, DFG's analysis does not appear to take into consideration that the areas with continuing reverse flows comprise only a small percentage of South Delta areas and that even the entire South Delta area comprises only a small part of the fishery resources of the Delta as a whole.

The DFG conclusion that the Peripheral Canal is the preferable Delta facility recognizes that the Canal could be built but not operated in a way to protect fisheries. The Peripheral Canal will protect fish and wildlife only with adequate water quality and flow standards and the construction of Suisun Marsh facilities:

> "The Peripheral Canal . . ., in combination with facilities for the Suisun Marsh and adequate water quality and inflow standards, could restore the major fish and wildlife resources nearly to historical levels."

It is important to note that SB 200 requires that Peripheral Canal construction not begin until DWR and DFG enter

into an agreement for fish and wildlife protection. That agreement must provide for the restoration of adult populations of fish and wildlife at "historical levels", the maintenance of "historical levels" (apparently regardless of circumstances), and must provide for the realization of the potential of the project for increasing fish and wildlife resources above historical levels. Discrepancies between that statutory requirement and the degree to which official statements reflect an inability even to restore historical levels are discussed in Section 5H.

5. SB 200

A. Creation of the SB 200 Package - What It Includes

The provisions of SB 200 are not presented in the bill itself facility-by-facility. It is consequently difficult to evaluate quickly all the conditions and restrictions involved. SB 200 is summarized below by facility to the extent possible, with references to the section numbers in SB 200 in brackets.

Peripheral Canal [11255(a)]

1. The Peripheral Canal will be a 42-mile man-made channel around the eastern and southern rim of the Delta and will include canals, pumping plants, intake and outlet structures, siphons, and fish screens. It is to be constructed in three stages, with stages 1 and 2 proceeding concurrently. Stage 1 is construction of the actual Canal from the town of Hood on the Sacramento River to Shima Tract near Stockton. Stage 2 will be "pre-consolidation" from the San Joaquin River to Clifton Court Forebay. Stage 3 will consist of completion of the Canal from Shima Tract to Clifton Court Forebay. [11255(a)]

2. When stage 1 is completed, it must be operated for a 2-year period "to establish adequate fish screen and operational criteria." Stage 3 will only be constructed "when the Director of Water Resources and the Director of Fish and Game both determine from the results of the trial period that the fish screens and operation criteria will adequately protect fish populations." [11255(a)]

3. DWR is required to complete design work and other "prerequisite activities" and commence construction as soon as possible. [11256(b)]

4. Before construction can begin, DWR and DFG must enter into a permanent agreement to provide for "the restoration and maintenance of all adult populations of fish and wildlife at historical levels in the Delta and the Suisun Marsh and the San Francisco Bay System." The agreement must include "those limitations on exports and diversions to storage which are necessary to restoring and maintaining historical levels of fish and wildlife." The agreement must also provide for "the realization of the potential of the project for increasing [fish and wildlife] . . . resources above . . . [historical] levels . . . consistent with the contracts for water delivery and with other purposes of the projects." [11256(a)]

5. Before constructions can begin, an environmental impact report on the Peripheral Canal must be prepared which must include an evaluation of possible impacts of the Peripheral Canal on Sacramento River "mineral, nutrient, and biological components." [11258]

6. The Suisun Marsh facilities must be completed before Stage 1 of the Canal is completed [11255(e)]. The South Delta Water Quality Improvement Facilities must be completed before the Peripheral Canal is completed. [11255(d)]

7. DWR may provide for joint use of the Peripheral Canal with local agencies or with the United States upon execution of agreements concerning operation, financing, and sharing of benefits of the Peripheral Canal unit. [11255(a)] With certain exceptions [11458(b)], federal project use of the Canal is additionally conditioned on a permanent federal-state agreement for the coordinated operation of the federal and the state projects, compliance by the United States with state water quality standards and water rights conditions, and a permanent federal-state agreement for fish and wildlife restoration and maintenance. [11458(a)]

Contra Costa Canal Intake Relocation [11255(b)]

1. Relocation is subject to the terms of a contract between DWR and the beneficiaries. [11255(b)]

Los Vaqueros Unit [11255(c)]

1. To be located 8 miles west of Clifton Court Forebay, in Contra Costa County. [11255(c)]

2. "Other offstream storage reservoirs" possible, with location at the discretion of the DWR Director. [11255(c)]

3. Authorization is conditional upon completion of engineering, economic, environmental, and financial feasibility reports acceptable to DWR. [11257]

South Delta Water Quality Improvement Facilities [11255(d)]

1. To be completed no later than the Peripheral Canal. [11255(d)]

2. Facilities unrelated to Peripheral Canal construction or operation to be constructed only if a DWR-water agency contract is executed. [11255(d)]

3. To include pumping plants, discharge canals, flow control structures, channelization of sloughs to improve South Delta water quality, circulation, and distribution, and may include facilities and/or exchange arrangements to deliver water to the San Joaquin River via the federal Delta-Mendota Canal. [11255(d)]

Suisun Marsh Facilities [11255(e)]

1. To be completed no later than stage 1 of the Peripheral Canal. [11255(e)]

2. DWR to construct, maintain, and operate protection facilities to mitigate for adverse impacts of reduced Delta outflows on Suisun Marsh wildlife resources (or contract for same with Suisun Resources Conservation District) pursuant to a joint Suisun District-DWR-Fish and Game plan. [11255(e)]

3. DWR must enter into a permanent and enforceable contract with the Suisun District. [11456]

Groundwater Storage Facilities [11255(f)]

(1) South San Francisco Bay Area
(2) San Joaquin Valley
(3) Southern California
(4) Enlarged East Branch California Aqueduct and Devil Canyon Power Plant

1. To provide estimated 400,000 acre-feet per year yield. [11255(f)]

2. To include the capitalized cost of delivering water for filling or refilling groundwater storage space. [11255(f)

3. None of facilities are to be constructed or operated within a SWP contractor's boundaries except by contract. [11255(f)]

4. Authorization is conditional upon completion of engineering, economic, environmental, and financial feasibility reports acceptable to DWR. [11257]

Glenn Reservoir-River Diversion Unit [11255(g)]

1. To be located near Stony and Thomes Creeks on the west side of the Sacramento Valley, and can be constructed in stages. [11255(g)]

2. Authorization is conditional upon completion of engineering, economic, environmental, and financial feasibility reports acceptable to DWR. [11257]

DWR has recently decided to defer further study of a full-scale Glenn Reservoir. Instead, it has identified a smaller project called the Thomes-Newville Unit, which is not included in SB 200. Thomes-Newville would develop surplus local runoff of Stony Creek and Thomes Creek. Construction of Thomes-Newville would not prevent later building the Glenn Reservoir for offstream storage of Sacramento River water. DWR now states that further analysis of the Glenn Reservoir-River Diversion Plan will be considered only as an alternative to enlarging Shasta Reservoir. [See discussion at Section 5F, below, of what actually will be built if Proposition 9 passes.]

Colusa Reservoir-River Diversion Unit [11255(h)]

1. Authorized only if Glenn Unit is not feasible. [11255(h)]

2. To be located in the western portion of Glenn and Colusa Counties. [11255(h)]

3. Authorization is conditional upon completion of engineering, economic, environmental, and financial feasibility reports acceptable to DWR. [11257]

Wastewater Reclamation Programs [11255(i)]

1. Undefined facilities authorized if "economically competitive with alternative new water supply sources." [11255(i)]

2. None of facilities are to be constructed or operated within a SWP contractor's boundaries except by contract. [11255(i)]

Water Conservation Programs [11255(j)]

1. Programs to be within SWP contractor's boundaries. [11255(j)]

2. Implementation contingent on DWR contracts with SWP contractors. [11255(j)]

3. Wastewater reclamation and urban conservation in contractor areas estimated to total 700,000 acre-feet per year by year 2000. [11255(j)]

Mid-Valley Canal Unit [11255(k)]

1. Construction primarily to alleviate groundwater overdraft and to serve waterfowl management areas. [11255(k)]

2. Repayment of full state costs required. [11255(k)]

3. Water delivered to the unit must be delivered through the Peripheral Canal but cannot be SWP water. [11255(k)]

4. Authorization is conditional upon completion of engineering, economic, environmental, and financial feasibility reports acceptable to DWR. [11257]

5. Before construction can begin, DWR and DFG must enter into a permanent fish and wildlife agreement. [11256(a)]

Western Delta Overland Water Facilities [11255(e)]

1. To supply water to agricultural areas on Sherman Island, Jersey Island, Hotchkiss Tract, and adjacent areas. [11255(e)]

Water Transportation Facilities to Termini of San Joaquin, San Francisco and San Mateo Counties [11255(m)(1)]

Water Transportation Facilities for Federal CVP Water to Alameda and Contra Costa Counties [11255(m)(a)]

SB 200 also includes a number of provisions concerning SWP operation generally which are not tied to particular facilities:

Contracts with Specified Delta Water Agencies [11456]

1. DWR must enter into permanent and enforceable water rights and water quality contracts with eight water agencies and districts in the Delta. The contracts must recognize the rights of Delta users to use Delta waters and must establish minimum water quality criteria. The quality must be adequate to permit the preservation of present Delta agricultural, domestic, and environmental uses. [11456]

2. Contract water rights and water quality criteria must be met before water can be exported from the Delta. [11456] [See also 11460(b)]

3. Delta water users must make reasonable payment for net water supply and quality benefits received from the SWP and CVP, offset by any detriments caused by the project. [11456] [See also 11457]

4. If contracts are not entered into by the time SB 200 becomes effective, differences must be resolved at the request of either party by binding arbitration. After contracts are made covering 2/3 of the total Delta and Suisun Marsh area within the listed Delta agencies, either party can withdraw from arbitration. [11456]

DWR has entered into contracts with two agencies, the North Delta Water Agency and the East Contra Costa Irrigation District.

5. DWR must operate the SWP in compliance with water quality standards set forth as conditions in water rights

permits and licenses, in water quality control plans, or as established by contract. [11460(b)]

Allocation of Costs Related to Specified Benefits [11457, 11915.2]

1. The costs of providing any net benefits to Delta agricultural, municipal, and industrial water users shall not be reimbursable by any SWP contractors who do not receive those benefits. [11457]

2. The costs allocable to providing water to compensate for historic upstream depletions and diversions which have reduced Delta, Suisun Marsh, and San Francisco Bay water quality, fish and wildlife, and recreation shall not be reimbursable by any public agencies that have contracted for SWP water supplies. [11915.2]

Compliance With Water Quality Standards, Plans, and Contracts]11460(b)]

1. The SWP must be operated in compliance with water quality standards in water rights permits and licenses, water quality control plans, and contracts. [11460(b)]

2. DWR must operate the SWP to rectify any failure of the U.S. to operate the CVP in accordance with water quality standards, plans, and contracts. [11460(b)]

Uncodified Provisions

1. Section 10 authorizes DFG to study the interrelationship between Delta outflow and waste discharges into the San Francisco Bay System.

2. Section 11 requires DWR to study the "possible interconnection" between the SWP and Alameda, Contra Costa, San Francisco, San Joaquin, and San Mateo Counties water supply systems.

3. Section 12 authorizes DWR to participate in a joint state-federal investigation of the need to enlarge Shasta Dam and Reservoir.

B. SB 200 - What It Will Cost

1. Cost Estimates.

Vastly different cost estimates for SB 200 and the Peripheral Canal have been cited. Different cost estimates cover different facilities, some estimates are in present-day dollar values, some are in escalated ("inflated") dollar values, and DWR has changed what it included in its estimates (such as inflation and bond interest) and the projected construction period. Cost estimates in current dollars show what a facility would cost if all costs were incurred immediately. Cost estimates given in inflated, escalated dollars show what a facility is projected to cost when the construction is scheduled to occur. Over the last five years, DWR has prepared cost estimates for SB 346 facilities, for SB 200 facilities (which are not precisely the same as SB 346 facilities), and for the Peripheral Canal.

Two frequently cited figures are $23 billion and $11.63 billion. These two figures come from DWR's Bulletin 132 series. The $23 billion figure, from Bulletin 132-79, is an estimate of the escalated cost of the entire SWP from 1952 until 2035, excluding interest cost, but including $2.67 billion for facilities which have already been built and some future facilities not included in SB 200. The $23 billion figure is relevant to the State's financial capacity to support longer-term water development in relation to other long-term capital requirements such as highways, housing, and solid waste disposal. The $23 billion figure does not, however, represent SB 200 costs.

In the 1980 revision and update of its Bulletin 132 series on current SWP activities and future management plans, DWR decided to restrict future cost estimates to the year 2000 instead of the year 2035. Bulletin 132-80 consequently contained a reduced estimate of $10.1 billion for the total escalated cost, exclusive of interest cost, of the entire SWP for the years 1952 to 2000. In 1981, DWR re-estimated the entire SWP costs from 1952 to 2000, to be $11.63 billion, not including interest costs. No cost figures for the years 2001 to 2035 are given, although repayment obligations continue to the year 2035.

The Legislative Analyst prepared a report on SB 200 costs for the Legislature July 1, 1980. The Legislature used that report at the time SB 200 was enacted. It provided the then current DWR estimate of what SB 200 will cost. The report warned that it is not possible to arrive at a precise figure for the total cost of SB 200, and estimated that SB 200 would cost $4.330 billion (in 1979 dollars) "plus unknown added costs". [See table, below.]

The Legislative Analyst's estimated total project cost was based on "revised data" from DWR's 1978 edition of Bulletin 76. Bulletin 76 assumed federal participation and sufficient capacity to meet both federal and state needs. The Legislative Analyst's report noted that it might be possible that the total project cost could be reduced if the federal government did not participate and if the facilities were redesigned to meet only state needs: "However, the bill has no provision indicating that any facilities would be smaller and less costly should

federal support not be available." SB 200 facilities, including the Peripheral Canal, have not been redesigned to meet state needs only, and, in fact, federal CVP water may be delivered through the Canal to Clifton Court, whether the federal government participates or not. [See discussion at Section 8C, below.]

The report of the Legislative Analyst which will be included in the voter ballot pamphlet used the figure of $3.1 billion for the total cost of SB 200. Use of that figure was challenged in the Superior Court, and the Court held that the ballot information was misleading. The most significant change made by the Court was in the ballot title and summary language, which will now state:

> "Potential construction costs at 1981 prices are in excess of $3.1 billion plus unknown additional costs, plus interest, to be financed by increased user charges."

DWR's most current estimate of the total cost of SB 200 provided to the Task Force is based on information in Bulletin 132-81. DWR's present estimate is $5.38 billion for all SB 200 facilities (also plus unknown added costs), including $1.289 billion for the Peripheral Canal [see table, below]. These estimates are in escalated dollars, but do not include interest costs. DWR has also estimated these costs in 1981 dollars and 1981 price levels as $2.457 billion for all SB 200 facilities to be built by the year 2000 and $680 million for the Peripheral Canal only. The assumptions used by DWR in calculating escalated costs will be considered below.

DWR has specifically requested that the Task Force include DWR's comments on the relative nature of escalated cost figures. An in-house DWR memorandum contains such a statement:

> "Many people are confused (if not overwhelmed) by the magnitude of the figures resulting from escalation due to inflation. There is an inevitable tendency to think of year 2000 escalated cost figures in terms of 1982 dollars. Perhaps this can be put in better perspective by looking back 18 years instead of ahead. In 1964, for instance, the price of a nice car was in the $3,500-$4,500 range and a 3-bedroom, 2-bath house was perhaps $26,000. Now, 18 years later, in 1982, the comparable car is about $8,000-$10,000 range. Fortunately, however, we don't have to buy at 1982 prices with 1964 dollars; the dollars aren't the same either. As prices rose from 1964 to 1982, there was a corresponding increase in wages. Similarly, in year 2000, with inflation there will be a lot more dollars to pay those year 2000 prices." [Undated memorandum "Senate Bill 200/Peripheral Canal Costs".]

The following table compares cost estimates used by the Legislative Analyst with DWR cost estimates in both 1981 and escalated dollars:

DWR and Legislative Analyst Report
SB 200 Construction Cost Estimates
(in millions of dollars)

Facilities	Legislative Analyst's Report (1979 dollars)	DWR Bulletin 132-81 (1981 dollars)	DWR Bulletin 132-81 (escalated dollars)
Peripheral Canal [No separate costs given for 3 stages]	$600	$680	$1,289
Contra Costa Canal Intake Relocation	$25	$27	$62
Los Vaqueros Reservoir [no separate costs given for undefined other offstream storage reservoirs]	$720	$872	$1,894.7
South Delta Water Quality Improvement Facilities	$30	$36	$87
Suisun Marsh Facilities	$35	$60	$69.5
Groundwater Storage	$226	$112	$265.8
East Branch Enlargement	$150	$161	$274.9
Glenn Reservoir Unit	$2,000	No estimate	No estimate
Thomes-Newville	No estimate	$493	$1,406.1
Western Delta Overland Facilities	$12	$16	$28.8
Mid-Valley Canal Unit	$645	No estimate	No estimate
Total	*$4.443 billion	*$2.457 billion	*$5.378 billion

*The Legislative Analyst's Report states that its $4.443 billion is "plus unknown added costs". DWR's $2.457

billion and $5.378 billion estimates do not include estimates for Glenn Reservoir, which the Legislative Analyst estimated to be $2 billion in 1979 dollars or for the Mid-Valley Canal Unit, which the Analyst estimated to be $645 million in 1979 dollars.

The Legislative Analyst's $3.1 billion figure which will be used in the voter's ballot pamphlet adds to DWR's $2.457 billion $633 million for the cost in 1981 dollars of the Mid-Valley Canal.

No cost estimates have been provided for any of the other SB 200 facilities, including:

Colusa Reservoir Unit
Wastewater Reclamation Programs
Water Conservation Programs
Water Transportation Facilities to Termini of San Joaquin, San Francisco, and San Mateo Counties
Water Transportation Facilities for CVP Water to Alameda and Contra Costa Counties

No costs are estimated for mandated studies, for costs of benefits to Delta users and of providing water to compensate for historic upstream diversions which are not reimbursable by SWP contractors, for the provision that the SWP must be operated to meet water quality standards whether the CVP is operated to meet the standards or not, for projected $1.5 billion added costs of local distribution facilities, or for power generating facilities. DWR's figures continue to assume that the Peripheral Canal will be sized to carry federal water. No cost estimates are given for ACA 90.

2. Assumptions made regarding construction scheduling, costs, and inflation over the construction period.

DWR's cost estimates must be analyzed in terms of the underlying assumptions. Analysis must include basic construction costs and projected construction schedules, inflation, and interest rates.

The construction schedule for SB 200 facilities has been changed numerous times. Changes in the schedule directly affect total escalated cost figures. The following is DWR's most recent construction schedule, which it calls its "most optimistic schedule":

Facility	Construction Period
Peripheral Canal Stage One	1983-1988
Peripheral Canal Stage Two	1986-1992
Peripheral Canal Stage Three	1988-1993
Suisun Marsh Protection	1981-1984
South Delta Water Quality Improvement	1988-1994
Relocate Contra Costa Canal Intake	1988-1994
Western Delta Overland Facilities	1985-1990
Los Vaqueros Reservoir	1985-1995
Groundwater Storage	1983-2000
East Branch Enlargement	1983-1989
Thomes-Newville	1985-1993

DWR has also estimated costs on a year-by-year basis for the $5.378 billion construction cost estimate, exclusive of interest:

Year	Amount (millions)
1981	4.3
1982	20.5
1983	54.8
1984	56.9
1985	60.6
1986	151.6
1987	382.5
1988	670.8
1989	453.9
1990	471.7
1991	645.8
1992	794.5
1993	687.8
1994	553.1
1995	311.1
1996	57.7
1997	0.1
1998	0.1
1999	zero
2000	zero
	5,378.0

DWR's escalated costs assume an annual inflation rate of 9% for construction prices, 7% for state salaries, and 10% for land acquisition over the period 1981-2000, but do not include interest costs.

3. Bond interest costs are not included in DWR cost estimates.

Interest costs on bonds sold to finance whatever portion of the funding of SB 200 cannot be obtained from project revenue or tidelands income must be added to estimated construction costs. The interest costs of bonds are difficult to forecast with precision, but are very significant.

DWR has not included interest costs in its $5.378 billion estimated cost of SB 200, although it calculates and publishes interest cost figures in its bulletins based on the

assumption that $2.297 billion in revenue bonds will have to be sold to finance SB 200 construction. DWR is now suggesting that it may be able to build the Peripheral Canal and other SB 200 facilities on a "pay-as-you-go" basis, without selling any bonds. The Task Force believes that DWR's "pay-as-you-go" calculations may be incomplete, and in any case would only shift bond interest costs to local districts and from SB 200 facilities to non-SB 200 facilities. [See discussion of "pay-as-you-go" financing in Section 5C, below.]

DWR believes that interest costs should not be included in the cost projection of SB 200, but should be reflected in water rates. The Task Force, however, disagrees. It believes that voters should be informed of the total cost of SB 200, including both construction and bond interest, as well as projected water rates.

Normally, when the electorate votes on state bond issues, the Legislative Analyst describes in the ballot pamphlet both project purposes and the total estimated cost of the proposed bond issue, including principal and interest for the full term of the bond issue. SB 200 presents an unusual case since DWR has previously been given general authority to issue revenue bonds, and not until specific projects are approved does this interest cost become a definite amount. Because potential bond costs are created by project approval by the vote on Proposition 9, it is appropriate that the total cost should be identified in the usual manner for a vote on a bond issue.

At the same time, because the people will be voting to impose costs upon those who will pay for the water, the general public should not only be told the total cost of projects, but also what the rates for payment are expected to be. SB 200 was not an appropriations bill and was not subject to the 2/3 vote requirement, despite its being (except for the omnibus budget bill) the largest cost bill ever. This heightens the need for describing the full cost of the measure for public consideration in a referendum.

DWR estimates that approximately $2.297 billion of revenue bonds will have to be issued to finance SB 200 facilities. Calculation of interest costs for $2.297 billion of revenue bonds depends on the bond interest rate, the discount rate, and the term of the bonds.

DWR assumes an 8½% annual interest rate and a bond term of 40 years for future supplemental water revenue bonds, and an 8½% rate and 20 year period for future water bonds. DWR calculates that SB 200 interest costs, based on an 8½% interest rate to the end of the bond repayment periods, will be 89.4% of total SWP interest costs, or $7.2 billion. If this interest cost is added to the $5.3 billion construction cost estimate, the total cost of SB 200 is about $12.5 billion. The interest cost would be less if the bond term were shorter or greater if the interest rate were higher.

While an 8½% rate is higher than previous DWR revenue bond issues, it is low compared with current bond rates. A more nearly comparable current rate would be 12% or higher. The

representative from Dillon, Read, and Co., Inc., DWR's bond advisor, stated that 8½% was selected because that was the legal maximum on water revenue bonds. That rate does not reflect an accurate or realistic assessment of what the market will demand. In the event that current bond interest rates continue to be over 12%, the cost of the projects in SB 200 would rise sharply to over $17.5 billion.

C. SB 200 - How Will It Be Financed?

DWR provided the Task Force with the following table:

FINANCING SB 200 FACILITIES

Years	California Water Fund: Tidelands Oil Revenue	California Water Fund: SWP Revenue Transfers	Revenue Bonds	Miscel-laneous Receipts	General Obligation Bonds	Total
1981-85	87	85	0	25	0	197
1986-90	125	873	1,026	25	83	2,132
1991-95	100	1,511	1,271	25	84	2,991
1996-2000	0	58	0	0	0	58
TOTAL	312	2,527	2,297	75	167	5,378

As noted above, DWR has assumed that $2.297 billion in revenue bonds would have to be issued to finance SB 200. Several problems may prevent DWR from marketing those bonds. Dillon, Read has given the opinion that DWR's proposed schedule of bond financing for SB 200 "is reasonable under present market

conditions and the Department could successfully issue approximately $300 million principal amount of revenue bonds per year during the period 1986 through 1995." Dillon, Read attaches major conditions to that opinion, however:

> 1. Enactment of State legislation raising the present interest rate maximum of 8½% "to levels required by then existing market conditions"; and
>
> 2. Development of "appropriate documents authorizing and securing such revenue bonds".

Dillon, Read assumes that water revenue bonds will be secured by a portion of SWP contractor payments, "certain investment income", and "may also be secured by water revenues not derived from the water supply contracts in the event of default by one or more water contractors." It also assumes that all power facilities revenue bonds would be "completed" before SB 200 facilities revenue bonds would be issued.

There are serious questions concerning the issuance of revenue bonds which have not been answered satisfactorily. For example, the impact of the general deterioration of the bond market on SWP bond sales has not been determined. Questions have been raised whether SWP revenues can be committed to new revenue bond issues without impairing repayment of outstanding general obligation and revenue bonds. The Task Force has noted these important questions, and believes answers should be provided as soon as possible.

Tidelands fund revenues are a significant part of SWP financing. DWR has assumed that it will receive $312 million, as set forth in the above table, from the Tidelands fund from 1981

through the year 2000, and has stated that that revenue is an important factor whether bonds are issued or "pay-as-you-go" financing is used.

The 1982-1983 budget reduces the amount of tidelands revenues to go to the SWP from an expected $30 million to $14.7 million. Considering the uncertain nature of state budget needs, it is impossible to predict whether similar or more severe cutbacks can be anticipated in the future.

DWR describes present SWP financing as being in a "critical revenue period", with revenues barely meeting expenses until 1985. Loss of a substantial share of tidelands revenues would impair the construction schedule for SB 200 facilities.

DWR has recently asserted the position that revenue bond financing may not be necessary at all, or to a much more limited extent. It suggested to the Task Force in January that "pay-as-you-go" financing would be possible. At the Task Force's request, DWR analyzed the "pay-as-you-go" option.

DWR's original "SB 200 Pay-As-You-Go Study" assumed that no bonds at all would be sold to finance SB 200 facilities, full tidelands fund monies would be available, and SWP contractors would agree to modify their contracts and accept "surcharges" of up to 11% to provide additional revenues for funding requirements that otherwise would require bond sales. DWR originally calculated the amounts of supplemental funding without bonds needed for three different scenarios: (1) existing facilities plus Peripheral Canal; (2) existing facilities plus Peripheral Canal, groundwater, and East Branch enlargement; and

(3) all of (2) plus Thomes-Newville. [See Section 5D(1), below, for unit water rates based on the same assumptions.]

DWR stated that the "pay-as-you-go" studies also assume:

> (1) Water deliveries are deliveries that could be made during a dry period similar to the 1928-1934 dry period.
>
> (2) Where there is not enough water to meet entitlement requests, reductions are not 50% agricultural water first; instead all deliveries are reduced proportionally (as existing contract provision 18(b) requires for permanent shortages).
>
> (3) Construction of Thomes-Newville is delayed 4 years from Bulletin 132-81's estimate. A 1989-1997 construction period is used instead of a 1985-1993 period.
>
> (4) The studies are cut off at year 2000, even though the project repayment period does not end until the year 2035.

No other assumptions were originally identified.

DWR concluded that approximately $214 million of "supplemental funding" in addition to $2.75 billion from "available sources of funding" (California Water Fund, power revenue bonds, and other miscellaneous receipts) would be needed to build the $1.289 billion Peripheral Canal and to pay for $1.7 billion of additional facilities. (The $1.7 billion includes $300 million of SB 200 facilities, $900 million of non-SB 200 power facilities, and $500 million of other non-SB 200 facilities such as installation of additional pumps, according to DWR.) $142 million would be charged to SWP contractors as a surcharge, and would require new contract agreements, with the remaining $72 million accrued as interest. Interest would be accrued because surcharges would not be collected on an as-needed basis, but

would be spread evenly over a period of years. Annual $15.7 million surcharges would be imposed, beginning in 1986 and continuing through 1994.

If groundwater storage and the East Branch Enlargement are added, total capital requirements rise to $3.5 billion, requiring "supplemental funding" of $408 million in addition to the $3.1 billion from "available sources of funding". Surcharges totalling $341 million would be collected over the years 1986 to 1994, requiring annual payments of $37.8 million in those years.

If Thomes-Newville is added, total capital requirements would be $5.49 billion. $1.31 billion would be needed, in addition to the $4.18 billion from "available sources of funding". Surcharges totalling $954 million would be collected over the years 1986 to 1999 requiring additional annual payments of $68 million.

DWR contended that even though contractors would pay revenue surcharges, their total payments would be less than if DWR sold bonds and charged the contractors for the interest costs on those bonds to DWR. DWR claimed that "pay-as-you-go" would be cheaper because of DWR's "project interest rate" calculations. DWR stated that, if it does not issue bonds, but obtains the contractors' approval to use the "pay-as-you-go" option, the revenue surcharge would be less than the impact on contractor payments with projected "project interest rate" increases. DWR charges contractors the "project interest rate" on reimbursable capital costs minus power revenues, even though DWR does not

actually pay interest for the use of the California Water Fund (tidelands) money.

Whenever DWR sells bonds, and the interest rate on the new bonds is different from previous rates, DWR adjusts the overall "project interest rate" for all bonded indebtedness. For example, until 1981, the "project interest rate" was 4.584%. In 1981, Reid-Gardner power project Bond Anticipation Notes were sold at 8.5%. DWR then recalculated its "project interest rate" to be 4.606%, and applied that higher 4.606% rate retroactively to all outstanding indebtedness and required the contractors to pay retroactively for that increase as a balloon payment in 1982.

Power and water revenue bond issues projected by DWR to be sold at 8.5% would raise the "project interest rate" to 7.034% by the end of 1994. If new bonds were sold at 12% (current market rates), the "project interest rate" would rise to approximately 9.2% by the end of 1994, and even more substantial balloon payments based on the increased interest rate would have to be paid by the contractors.

DWR did not provide an analysis of the comparative impacts on contractors of these balloon payments versus the impacts of projected surcharges.

No estimate was originally given by DWR for the "pay-as-you-go" study concerning the entire SB 200 package, which includes other facilities such as Los Vaqueros. There was originally no surcharge estimate to compare directly to the $2.297 billion in revenue bonds DWR has said it would need to finance the $5.38 billion worth of SB 200 facilities.

DWR argued that it does not know what facilities it would build after Thomes-Newville, or how it would choose to finance any other facilities after the year 2000. DWR repeatedly stated that "pay-as-you-go" financing gives DWR the flexibility to proceed with the Peripheral Canal, and possibly groundwater storage, the East Branch enlargement, and Thomes-Newville, and that what may be built after those facilities is entirely speculative.

Just before the last Task Force meeting, DWR gave the Task Force an estimate of surcharges that would be needed to build all the SB 200 facilities included in DWR's $5.378 billion cost estimate. That final study shed new light on the original three studies.

If all SB 200 facilities including the Peripheral Canal, groundwater storage, East Branch enlargement, Thomes-Newville, and Los Vaqueros were built by the year 2000, total capital requirements would be $6.8 billion (includes the additional $1.7 billion, the breakdown for which is noted above). $990 million would be collected as surcharges (on which interest would accrue in the amount of $240 million), in addition to the $5.59 billion from "available sources of funding". Surcharges would have to be collected beginning in 1984, and continuing through 1991. A 23% surcharge, $124 million, would be imposed annually.

For the first time, DWR indicated that in all of its "pay-as-you-go" studies it has applied all presently planned SWP contract revenues ("revenue transfers") to SB 200 facilities

first, rather than to split revenue transfers between SB 200 and non-SB 200 facilities as was done for DWR's original SB 200 financing calculations. Those original calculations showed revenue bond financing of $2.297 billion with $2.527 billion in revenue transfers allocated to SB 200 facilities. For its "pay-as-you-go" studies, DWR shifted all revenue transfers to SB 200 facilities. By shifting SWP revenue transfers all to SB 200 facilities, the result, according to DWR, will be that all non-SB 200 facilities will have to be financed with revenue bonds. In effect, DWR's "pay-as-you-go" proposal would be shifting the need to finance with revenue bonds from SB 200 facilities to non-SB 200 facilities.

DWR argues that there are three reasons why the $990 million of surcharges cannot directly be compared to the previous DWR estimate that $2.297 billion in revenue bond financing would be required. First, with surcharges, bond interest is not paid and there would be major savings to contractors after the year 2000, because they would not be paying bond interest costs. Second, DWR is applying revenue transfers differently than it did in its previous study which showed a need for $2.297 billion in bonds. With the "pay-as-you-go" study, DWR is applying all revenue transfers to SB 200 facilities. The result of this is to shift the need for revenue bond financing to non-SB 200 facilities. Third, as DWR originally attempted to explain, the project interest rate would not be increased as a result of the issuance of revenue bonds at higher interest rates than the prevailing project interest rate.

Several additional assumptions have come to light as a result of DWR's new full SB 200 surcharge study. DWR has assumed it could use offset general obligation bonds totalling $167 million for Thomes-Newville, an assumption which was not made for the previous study. Also, DWR revised its construction schedule for the full SB 200 study back to the construction schedule shown in Bulletin 132-81. (The construction schedule for Thomes-Newville had been shifted in the third original study.) This shift in construction schedules back to the Bulletin 132-81 schedule is one of the reasons that surcharges begin in 1984, which is earlier than in the previous studies.

DWR pointed out that it may seem unreasonable that the full SB 200 surcharge of $990 million is only slightly larger than the $954 million surcharge without Los Vaqueros. DWR's response is that the new study charges a higher surcharge (23%) over a shorter period (only 8 years), and that the staging of capital requirements and surcharges is earlier. (The 1984-1991 period the DWR uses in its full SB 200 surcharge study is not apparently consistent with other construction schedules used by DWR [See Section 5B(2), above], although DWR has not explained that discrepancy.)

DWR has still not provided an analysis of the comparative impacts on contractors of revenue bond financing interest costs and balloon payments, versus projected surcharges, or a comparison of the cost of revenue bond financing versus surcharge financing from the contractors' standpoint. We recommend that these comparisons be made forthwith.

Several final comments must be made. Loss of tidelands revenues would affect pay-as-you-go calculations. If available funding sources are reduced, contractor payment surcharges would be higher. If they are increased, contractor payment surcharges would be lower.

The "pay-as-you-go" studies end at year 2000. This appears to be too short a period. The study should be extended for the entire SWP repayment period, to the year 2035. The California Water Fund will have to be repaid at some time, and that repayment obligation appears to be postponed with "pay-as-you-go" until after the year 2000. Postponing repayment of the California Water Fund means more of the financial burden of the project will be shifted from the contractors to the general taxpayers of the State.

DWR's shifts in construction periods significantly affects total financing requirements. The shift in the third original study of the Thomes-Newville construction period spread capital cost requirements more evenly over the 1983-2000 period. Shifts in construction times would appear to have a direct impact on surcharge amounts. (These assumptions are also important in analyzing "pay-as-you-go" unit water rates. See discussion below.)

DWR does not analyze the very important issue of how SWP contractors will obtain the additional revenue to pay the surcharges. Surcharges add 3% to contractor payments for the Peripheral Canal, 9% if groundwater and the East Branch enlargement are added, and 11% if Thomes-Newville is added, and

23% if Los Vaqueros is added. The possibility that Proposition 13 may restrict the use of property taxes to pay for additional facilities should be thoroughly considered, for example. [See discussion at Section 5D(2), below.]

"Pay-as-you-go" calculations do not take into account the interest costs to the contractors of paying surcharges to DWR or the costs to the general taxpayers of the State. In fact, the "pay-as-you-go" plan only shifts costs from SB 200 debt financing to local financing, to the general taxpayers, and to non-SB 200 facility financing. Even if "pay-as-you-go" would be cheaper for contractors, bond financing postpones repayment, and that postponement is itself a benefit to contractors.

"Pay-as-you-go" studies do not reflect the true costs to contractors and the general taxpayers. There are three major reasons. First, "pay-as-you-go" financing would shift financing costs to the contractors, a point which is graphically shown by the hundreds of millions of dollars of interest which the SWP would accrue on the surcharges. Second, "pay-as-you-go" would shift the need for revenue bond financing from SB 200 facilities to non-SB 200 facilities. And third, "pay-as-you-go" postpones the time at which the SWP begins to repay the tidelands fund.

All of these shifts, and the ramifications these shifts would have on SWP contractors and the general taxpayers of the State should be quantified and investigated thoroughly. DWR's "pay-as-you-go" studies are clearly misleading as to the total costs of financing SB 200 facilities without revenue bond financing.

D. SB 200 - What Will Water Users Pay For SB 200? The Peripheral Canal?

1. Unit Water Rates

In Bulletin 132-81 (page 13), DWR projected unit water rates in SWP service areas through the year 2000:

ESTIMATED TOTAL UNIT WATER RATES
IN SWP SERVICE AREAS THROUGH YEAR 2000*

The rates shown are in 1981 dollars per acre-foot. The underlined values are in escalated dollars per acre-foot, and take into account inflation projections.

SWP Service Area	1981	1985		1990		1995		2000	
Feather River	27	30	37	54	111	63	183	64	207
North Bay		209	362	216	402	205	486	198	521
South Bay	52	88	106	126	223	125	294	130	365
Kern County Water Agency (KCWA)	38	54	68	83	157	85	211	87	250
San Joaquin (excluding KCWA)	28	45	57	72	142	73	192	75	224
Southern California	160	219	273	277	476	283	592	288	753

In calculating these unit water rates, DWR assumed construction of SB 200 facilities scheduled to be built by the year 2000, financing with $2.297 billion revenue bonds at a bond interest rate of 8.5%, and capital, operation, maintenance, and replacement costs used in Bulletin 132-81. The escalated costs are based on an assumed annual inflation rate of 9% for construction (capital) and 7% for operation, maintenance, and replacement costs. The Task Force asked for an interest and

energy cost breakdown for these unit rates, but DWR has not supplied that information.

*Interest costs and power rates are very significant factors in estimating unit water rates. DWR assumed an interest rate of 8.5%. The Task Force believes 12% more correctly reflects current market conditions, and that use of a higher interest rate would cause substantial increases in unit water rates. If DWR's estimated power rates are understated, unit water rates are understated as well.

*It should be noted also that DWR's unit water rates reflect only the rates the contractors will pay for water, and not eventual costs to consumers. The final consumers will be paying additional costs added by the intermediary contractors and districts.

DWR did not include an additional $1.5 billion which it has calculated would be additional local delivery system costs. Even though local costs are not project costs per se, they are costs which must be paid over the life of the project, and should be noted.

The unit water rates are directly affected by any change in the amount of water to be delivered. The 1981 estimated unit water rates for Southern California are higher than 1980 estimates because of what DWR described as a "significant decrease in projected water deliveries in 1981 in the Southern California service area when compared to the projection used in estimating the 1980 unit rates."

At the request of the Task Force, DWR prepared a study of unit water rates in SWP service areas on a "pay-as-you-go" basis, assuming five different combinations of facilities:

1. Base case, existing SWP facilities only;
2. Existing facilities plus Peripheral Canal;
3. Plus groundwater program and East Branch enlargement;
4. Plus Thomes-Newville;
5. All SB 200 facilities.

It was assumed for studies 2, 3, and 4, that no water revenue bonds or general obligation "offset" bonds would be sold to finance SB 200 facilities. [But see discussion above relating to the fact that this assumption would only shift the need for revenue bond financing from SB 200 facilities to non-SB 200 facilities.] The new DWR full SB 200 surcharges study is not reflected in the fifth unit rate study. Unit water rates are shown in both 1981 dollars and escalated dollars.

Using the figures for the Southern California and San Joaquin service areas for the year 2000 as an example, it appears additional yield has the effect of preventing a significant rise in unit water rates if the demand for water increases as DWR has projected:

Southern California Service Area - Year 2000

	Water Deliveries (AF)	Unit Rate ($/AF) (1981 dollars)	Unit Rate ($/AF) (escalated dollars)
Base Case (existing facilities)	994,000	303	675
Study 2 (plus Peripheral Canal)	1,420,000	253	576
Study 3 (plus groundwater, East Branch enlargement)	1,534,000	253	574
Study 4 (plus Thomes-Newville)	1,569,000	256	608
Study 5 (SB 200)	1,587,000	288	753

San Joaquin Service Area - Year 2000

	Water Deliveries (AF)	Unit Rate ($/AF) (1981 dollars)	Unit Rate ($/AF) (escalated dollars)
Base Case (existing facilities)	539,000	90	207
Study 2 (plus Peripheral Canal)	778,000	77	177
Study 3 (plus groundwater, East Branch enlargement)	1,037,000	68	160
Study 4 (plus Thomes-Newville)	1,210,000	65	173
Study 5 (SB 200)	1,337,000	84	243

There appear to be problems with DWR's "pay-as-you-go" unit water rate assumptions. DWR's studies show that the unit rate of water will increase substantially from 1985 to 2000 if no new facilities are built, but will decrease slightly if additional facilities are built. DWR explains:

> "As additional conservation facilities are added to the existing facilities and project yield is increased, the unit cost of transportation facilities will decline. While this decrease in transportation facility unit cost is offset by an increase in conservation facility unit costs, the unit cost of water does not exceed that which would prevail with existing facilities until all of the SB 200 facilities are constructed."

This statement implies that after the "sunk" transportation facility costs stop decreasing, unit water rates will increase more rapidly with additional facilities.

DWR studies should be expanded to show comparative unit water rates for the full repayment period, to the year 2035. Also, as noted above regarding projected contractor surcharges to fund "pay-as-you-go" financing, "pay-as-you-go" does not reflect the fact that "pay-as-you-go" would postpone repayment of the California Water Fund monies until after the year 2000, and the effect that postponement would have on unit rates.

The years up until year 2000 may present an atypically flat curve for unit rate increases. DWR's study implies that unit rates will stay level or even decrease slightly so long as new conservation facilities are built. The "base case" of existing facilities shows that rates increase if new yield is not developed.

DWR states that development of new yield is forecast only up to the year 2000 and that DWR believes it is speculative to guess whether or how additional yield will be developed after 2000 and Thomes-Newville. When DWR reaches the point where new yield is not being developed, unit rates apparently will continue to increase until construction costs are repaid, then flatten out again, increasing only as power and other operation and maintenance costs increase. Extending the "pay-as-you-go" studies to year 2035 is necessary to develop these issues further.

DWR's unit water rates, regardless of the financing assumptions which are used, meld already developed water and substantially more expensive new water into a single rate . The unit water rates do not show the cost of new water separately from already developed water, but soften those new costs by blending new and present costs together. Even so, it is extremely difficult to understand how unit water rates would decrease where new water is more expensive to develop per acre foot than existing supplies.

2. Capacity of SWP Contractors to Pay Increased Rates

An increase in water rates has a direct bearing on water usage. And, at the same time, decreased use results in increased unit water prices.

It is generally recognized that urban water use will probably be less affected by a rate increase than agricultural water use. According to University of California agricultural economists, water prices do influence the amount used by irrigators. The farmer must balance water costs with potential income. Farmers may react to higher water prices by changing crop patterns or irrigation methods, or by going out of production.

Very little is actually known about how farmers would react to rate changes. A great deal depends on the type of crop being grown, the crop's relative water requirements and development costs, and the class of soil.

University of California studies indicate that many crops cannot economically be grown where water rates exceed

$100 per acre-foot. In some cases, increases to between $50 and $100 per acre-foot have caused changes in crops and irrigation methods. There is little dependable research on the "elasticity of demand" for irrigation, i.e., the percentage change in water use associated with a similar percentage change in the marginal cost of water.

The rates projected by DWR will in some cases exceed what agricultural users can afford to pay. San Joaquin Valley farmers point to the fact that SB 200 water is much more expensive than existing SWP yield. The present SWP 2.3 million acre-feet yield has cost $2.67 billion at low interest rates. SB 200 yield will cost $5.4 billion for 1.4 million acre-feet, at probably much higher interest rates. The cost of the new more expensive water is blended with the cost of already developed yield, but even the blended average cost of water could be too high for many San Joaquin Valley farmers, who believe they will be "blended out of business" by SB 200.

There apparently is only rudimentary information available on the repayment capacity of SWP contractors. No actual repayment capacity studies appear to have been done by DWR or the contractors.

An issue of overriding importance in analyzing the capacity of the contractors to pay for SB 200 is how contractors will raise necessary funds. Basic revenue sources for water districts are property taxes, user charges, and various district debt instruments.

Proposition 13 has had an impact on the availability of property taxes to contractors. Recent litigation (Goodman v. Riverside) raises the issue of whether contractors are or are not prohibited by Proposition 13 from levying property taxes to help pay for new SWP facilities.

Property taxes augment user charges. In the case of contractors who actually receive no water, property taxes are used exclusively. Increases in user charges will eventually have the effect of reducing demand. Goodman raises the very serious possibility that contractors may not be able to levy the property taxes needed in addition to user charges to pay increased water rates to build SB 200 facilities.

3. Assumptions Regarding Power Rates

Unit water costs depend on assumptions as to energy rates, interest rates, and construction costs. DWR power rate assumptions have been widely disputed. After April 1, 1983, power costs for pumping water will comprise most of the SWP's yearly operating costs and more than 40% of the charges paid by SWP contractors in certain years. Power purchase and sale contracts entered into in 1966, will terminate March 31, 1983, and rates will be significantly increased.

DWR has made a long-range estimate of future power needs and costs. The following is a summary of those projections:

DWR Estimates of SWP Energy Needs and Energy Rates

	1981	1985	1990	1995	2000
Total Energy Requirement (billions of KWH)	5.013	7.280	9.001	9.587	10.259
Total SWP Composite Rate (cents/KWH, in 1981 dollars)	.45	1.81	3.55	3.66	3.82
Total SWP Composite Rate (cents/KWH, in escalated dollars)	.45	2.77	4.06	5.31	8.02
Comparative Utility Composite Rates (cents/ KWH, From July 1981 Calif. Energy Commission Report in escalated dollars)					
Pacific Gas & Electric	5.67	8.31	12.45	17.83	32.82
Southern Calif. Edison	6.83	10.29	16.04	25.07	36.54
San Diego Gas & Electric	8.30	13.18	22.94	37.25	47.56

The projected energy costs for SWP pumping are very large. The projected SWP pumping load will be 10.259 billion KWH by the year 2000. The 10.259 billion KWH estimate assumes what DWR calls a "median condition of water supply", 3.7 million acre-feet per year. DWR staff indicates that the 3.7 MAF figure includes approximately 3.2 MAF of entitlement water, 400,000 AF surplus water, 140,000 AF related to the groundwater storage program, and 24,000 AF related to SWP operation requirements. If less than 3.7 MAF is pumped in the year 2000, the energy requirements will be less.

DWR will operate as a separate major energy utility after 1983. Bulletin 132-81 contains a comprehensive

description of the SWP's energy resources. DWR states that its Year 2000 energy requirements will be met as follows: 56.9% hydro; 10.9% geothermal; 9.7% coal; 9% "Edison exchange"; 2.5% "biomass"; .3% wind; and, 10.7% from additional sources of the same types.

If 10 billion KWH are required in the year 2000, at 8.02 cents per KWH, annual power charges in escalated dollars will be $802 million. In 1981 dollars, annual year 2000 charges will be $382 million (3.82 cents per KWH for 10.259 billion KWH). In separately derived calculations, DWR estimated year 2000 total energy costs (in 1981 dollars) would be $207 million for projected entitlement water deliveries.

Several factors affect the estimates of total power charges. One is that power costs will be higher if water revenue bond interest rates are higher than the 8½% rate assumed in Bulletin 132-81. Another factor is the potential that the SWP may have to purchase more power from Southern California Edison and others than now anticipated (if, e.g., some of the innovative power sources it plans to use do not meet their cost and energy production assumptions).

DWR's rate projections are substantially lower than the projected average rates of the State's major electric utilities. That disparity may mean that DWR energy rates will actually be higher than it is now projecting. It would be valuable to compare projected DWR power rates with other utilities' wholesale off-peak power charges to evaluate that issue.

E. SB 200 - How Much New Water Will It Provide?

1. Current SWP Yield and Maximum Deliveries

The amount of water that the SWP can dependably deliver in all but critically dry years is called "firm yield". Firm yield is made available from two sources:

1. Exports from the Delta of unregulated inflows after Delta water quality criteria are met;
2. Release of water stored during wet periods for use in dry periods.

DWR bases its firm yield estimates on the dry year 1928-1934 period.

In critically dry years, SWP water supply contracts allow reduced deliveries (deficiencies). Before any deficiencies are imposed on municipal users such as the Metropolitan Water District of Southern California, agricultural deliveries can be reduced by up to 50% in any one year and up to a total of 100% in any seven consecutive years. Farmers are therefore more immediately threatened by dry years.

SWP contractors have contracted for a maximum annual delivery of 4.23 million acre-feet per annum of dependable supply from 1990 on. This water is "entitlement water". By the year 2000, demand for SWP contract entitlement water is now projected by DWR to be approximately 3.2 million acre-feet per annum. Present dependable water supply from existing SWP facilities is 2.3 million acre-feet per year.

The difference between contract amounts and SWP yield will become larger over time if no new facilities are added. DWR estimates that SWP firm annual yield will decrease to

between 1.6 and 1.8 million acre-feet per year by the year 2000. This will result from increased uses in areas of origin, increased use by the federal CVP, whose rights are prior in time to the State's, and from what DWR describes as "reduced intermittent excess supplies" of water in the Delta. Using the year 2000 estimate of 3.2 million acre-feet (MAF) per year demand and a firm annual yield of between 1.6 and 1.8 MAF annually, DWR anticipates a shortfall in a dry year 2000 of between 1.4 and 1.6 MAF.

It should be recognized that in most years, the SWP has delivered more than the firm yield of 2.3 MAF. DWR estimates that in five of the previous nine years, total delivery capability of the SWP exceeded 3 million acre-feet and in two of those years exceeded 2.7 million acre-feet. Estimated 1981 deliveries were 2.8 million acre-feet.

The SWP also delivers "surplus water", which is water that the SWP has available to deliver in excess of the amount of entitlement water delivered. San Joaquin Valley farmers have been purchasing surplus water for approximately $5 per acre-foot, which pays the SWP for the power and other variable costs incurred in delivering the water. Surplus water is not water that is exchanged between the Metropolitan Water District and San Joaquin Valley farmers. The SWP sells water as surplus that is not needed to meet contract entitlements, and no reimbursement is made to contractors who do not take delivery of their full entitlement amount.

2. Relationship Between Delta Water Quality Standards and Project Yield

There is a direct relationship between SWP yield and Delta water quality criteria. Most of the water available for export by the SWP and CVP is Sacramento River water. Sacramento River water is pulled across the Delta to the export pumps. More water is exported than can be transferred from the Sacramento River via the Delta cross-channel and Georgiana Slough through the Central Delta, and the excess water must flow down the Sacramento River into the Western Delta and then back upstream (reverse flow) where it rejoins the cross-Delta flow to the export pumps. During low outflow periods, as the Sacramento River water moves into the Western Delta, it becomes more saline because of the intrusion of salt water toward the Western Delta from San Francisco Bay. There is a direct relationship between the salinity of water in the Western Delta and the amount of fresh water flowing out of the Delta.

The SWRCB requires the CVP and SWP to operate so that there is sufficient Delta fresh water outflow to meet SWRCB Decision 1485 water quality standards. The CVP challenges the SWRCB authority to place conditions on federal project operations, although it has agreed to help meet the standards voluntarily except in dry and critically dry years. The North Delta Water Agency and the East Contra Costa Irrigation District has entered into contracts with the Department of Water Resources which require the SWP to operate to water quality standards

comparable to D-1485 standards. The CVP has not joined in those contracts.

D-1485 and these contracts establish certain standards for certain points in the Delta and requires that water quality at those points be monitored. In dry years, these standards are primarily met by outflow of Sacramento River fresh water, whether from natural Sacramento River flows or from the release of stored project water.

A certain additional amount of fresh water outflow must be maintained either by natural river flow or by release of stored project water to repel salt water from the Western Delta and insure that fresh water will not be mixed with salt water as it is drawn around the western edge of the Delta to the export pumps. This additional outflow is called "carriage water". When flow in the Sacramento River is low, more of the necessary carriage water comes from releases of SWP and CVP stored water.

The Peripheral Canal and alternative Delta transfer facilities would provide yield for the SWP mainly because enough water could be carried around or through the Delta that carriage water would no longer be needed. With the Peripheral Canal or a through-Delta facility, Sacramento River water would not have to be pulled back around the Western Delta to the export pumps.

3. Projected Yield of the Peripheral Canal and SB 200

The Task Force has heard conflicting testimony as to the quantity of additional water which will be made available for export through construction and operation of the Peripheral

Canal. In a July 1981 position paper published by DWR entitled, "The Peripheral Canal and Other SB200 Facilities," DWR estimated a range of 475,000 to 630,000 acre-feet of water would be made available for export by the Peripheral Canal.

DWR now estimates that 700,000 acre-feet of additional water will be made available for export through construction and operation of the Peripheral Canal, primarily by eliminating the need for "carriage water". According to DWR, Stage 1 of the Canal would provide 300,000 acre-feet of that additional yield. [See discussion at Section 8B, below.]

Kern County Water Agency has stated that the Peripheral Canal yield may range from 500,000 acre-feet to 1 MAF, noting that the CVP has estimated Canal yield to be as low as 200,000 acre-feet.

The yield figure that is used depends on what assumptions are made. DWR has assumed, for example, that the SWRCB will reduce May and June export pumping limitations when the Peripheral Canal is built. (The SWRCB has not indicated that it would do so.)

DWR's 700,000 acre-feet yield estimate assumes that the CVP will help meet SWRCB water quality standards in dry and critically dry years. DWR acknowledges that if the CVP does not help meet the standards, the 700,000 acre-feet yield will be decreased. DWR believes that decrease would not be substantial. The Bureau of Reclamation has implied that the SWP would have to use more than the 700,000 acre-feet yield of the Peripheral Canal to make up for the CVP's not helping to meet standards.

DWR has also estimated the additional yield from other SB 200 projects:

	Acre-feet per Year
Groundwater	400,000
Cottonwood Creek	200,000
Thomes-Newville	220,000
Los Vaqueros	265,000

The total of projected yields, including the Peripheral Canal, is 1.785 million acre-feet per year. DWR does not include in this estimate the SB 200 figure of a 700,000 acre-foot per year reduction in SWP water demand by the year 2000 resulting from water conservation and water reclamation. DWR explains that:

> "Water conservation and locally-sponsored reclamation projects only defer (rather than reduce) the SWP demands because they do not contribute toward meeting the maximum annual water entitlements in the SWP contracts. However, if a waste water reclamation development is made part of the SWP, its yield would contribute to meeting the . . . 4.23 million acre-foot maximum annual entitlements of the SWP and thus would represent a permanent reduction in SWP exports from the Delta."

This statement is not logical. If water conservation programs can reduce demand significantly, actual demand may never reach maximum annual water entitlement amounts. If conservation would defer demand for a long time or permanently, only users of cheaper surplus water would benefit from unnecessary expansion of the SWP. [See discussion at Section 11, below.]

DWR has prepared in Bulletin 76-81 a detailed table listing projected reclamation projects which it describes as "more promising" but which are all still described as either "under study" or "future study". The total of these possible projects, which presumably would be included in SWP yield, is 37,500 acre-feet per year.

DWR estimates that there will be a 12-year gap between dependable SWP supply and projected demand, from 1983 to 1995. That gap may extend past 1995 if construction schedules are delayed. Completion by 1995 is based on DWR's "most optimistic schedule". There may not actually be shortages during that 12-year period, if future water years are normal water years rather than drought years. The projected shortages and inability of the SWP to meet demands would occur if there were an extended drought period similar to the 1928-1934 drought.

F. SB 200 - What Will Actually Be Built If Proposition 9 Passes?

SB 200 provides for the Peripheral Canal and storage reservoirs, but of these SB 200 only mandates immediate construction of the Peripheral Canal (and, by implication, Suisun Marsh and South Delta water quality facilities which must be built before Canal construction is completed). The other major facilities in SB 200, Los Vaqueros, groundwater storage, Glenn, Colusa, and the Mid-Valley Canal, are subject to feasibility studies. The Metropolitan Water District of Southern California (MWD) stated to the Task Force that only the Peripheral Canal is "on the table", and that approval of SB 200 is not a decision to build any of the SB 200 facilities except the Peripheral Canal.

There are many different conceptions of just what will be built if Proposition 9 passes. The fact that Los Vaqueros and Glenn Reservoirs are listed in SB 200 certainly implies that approval of SB 200 will mean that those reservoirs will be built. DWR now takes the position that those reservoirs may never be built, and does not even include the estimated cost for Glenn in its total cost estimates for SB 200.

It is not clear what facilities, if any, will be built if Proposition 9 passes. Any interest group that supports SB 200 in the belief that a certain SB 200 facility would be built should at least be apprised by DWR of DWR's present intention to build or not build a facility.

G. SB 200 - Feasibility Studies - Peripheral Canal vs. Other Facilities.

Feasibility studies required by SB 200 will provide cost information for some facilities, but not the Peripheral Canal. The Department must prepare a feasibility report for Los Vaqueros, groundwater storage facilities, Glenn and Colusa Units, and the Mid-Valley Canal. To a great extent, preparation of a feasibility report on the Peripheral Canal would have lessened the need for this Task Force's study. Section 11257 requires that the financial feasibility reports contain information which the Task Force has tried very hard to obtain:

a. An initial allocation of project costs to project purposes.

b. The proposed method of financing.

c. An estimate of the method of repayment.

d. An identification of the water and power contractors that are proposed to repay the allocated reimbursable water development costs including interest if any, on upstream storage, conveyance, operations, maintenance and replacement.

e. An estimate of the impact upon retail water prices in the various service areas of the project.

H. SB 200 and Fisheries Questions - What is the "Historic Level" concept?

SB 200 provides that construction of the Peripheral Canal shall commence only if DWR and DFG enter into a permanent fish and wildlife agreement. That agreement must provide for "the restoration and maintenance of adult populations of fish and wildlife at historical levels in the Delta and the Suisun Marsh and the San Francisco Bay System westerly of the Delta" and for the "realization of the potential of the project for increasing these resources above . . . [historical] levels. . . ." (SB 200 also requires the federal government to enter into a permanent fish agreement with the State to meet "historical levels" before the Peripheral Canal is used to transport water for the CVP.)

"Historical levels" are to be maintained by limiting exports and diversions to storage, as necessary. "Historical level" is defined to mean "the average annual abundance from 1922 through 1967 of the adult populations of fish and wildlife estimated to have lived in or been dependent upon any area, as determined by the Department of Fish and Game." DFG would have preferred a pre-CVP base period, but the CVP began operations in 1944, and the 1922-44 period contained 7 critically dry years.

It was decided that a longer base period would be needed to normalize the flow data. The resulting 1922-67 period was a compromise. DFG agreed to accept the detriments caused by CVP diversions and other diversions from 1944 to 1967. The projects agreed to include in the base period the benefits of augmented summer flows that resulted from release of stored water. Neither DFG nor the projects are sure what all the implications of using the chosen base period will be.

The "historical level" term describes a concept rather than a standard. DFG explains that the concept was developed in the mid-1970's during negotiations between DFG, DWR, the Bureau of Reclamation, and the U.S. Fish and Wildlife Service. SWP and CVP project operations, other upstream diversions, and factors not related to water development have adversely affected Delta fisheries. It is DFG's position that the SWP and CVP will have to restore flow levels that existed during the 1922-1967 period to the extent that flows are essential to maintain fish and wildlife levels. DFG is now in the process of deciding, on a case-by-case basis, what flow levels are required.

"Historical levels" is not a clearly-defined concept. SB 200 gives DFG absolute discretion in determining what "historical level" means. The historical level concept is described in the draft Memorandum of Agreement between DFG and DWR (November 1980), which sets forth principles for determining historical levels and standards. Historical levels will not be determined for every species; selected individual species or groups of species will be used. So long as overall fish and

wildlife resource values are maintained, some deviations from historical levels will be acceptable.

DFG has indicated that a new draft DFG-DWR agreement is scheduled to be released by mid-April, together with a draft EIR on the draft agreement. That new draft will not contain precise specifications for the Hood fish screen, but will require only that the screen be effective enough to achieve historical levels.

The draft will also reflect DFG's position that historical levels are to be achieved only after the Peripheral Canal is completed. This question was specifically debated during the Legislature's consideration of SB 200, but SB 200 does not contain any such express limitation. The Task Force has not been able to obtain an answer to the extremely important question of whether the SWP must meet historical levels even if the Peripheral Canal is never built.

The CVP and SWP responsibility, according to DFG, is limited to effects in the Delta, Suisun Marsh, and San Francisco Bay caused by the projects and other upstream diversions. The wording of SB 200, however, does not limit the responsibility to detriments of the project, and fears have been expressed that such an open-ended commitment could severely restrict water delivery capability. When DFG identifies an adverse effect on flows caused by CVP or SWP operations, DFG will determine to what degree that adverse effect would have occurred between 1922 and 1967, using historical flow and salinity records. A standard will then be set to provide conditions comparable to 1922-67

conditions, and project operations will have to be changed to meet the standard.

The SWP and CVP would have to modify their operations to meet the standards. The projects are running operations studies to determine who would have to pay for any operations changes. Depletions attributable to SWP operation would be charged to SWP contractors. Depletions by other upstream diversions would be charged to the State's General Fund.

In presentations to the Task Force, DFG added that the historical level concept relates only to effects in the Delta, Suisun Marsh, and San Francisco Bay. It is DFG's interpretation of SB 200 that the SWP is not obligated to restore, for example, the San Joaquin salmon run to historical levels, since that fishery has been adversely affected by many factors other than the SWP operation. DFG has not indicated the manner in which it would be able to separate out the effects on fisheries of industrial pollution or other water quality problems not related to salinity intrusion.

6. ACA 90 (Proposition 8)

The final version of SB 200 was last amended by the Legislature January 10, 1980. Senator Ayala, who authored SB 200, and the coalition which supported the bill agreed at that time not to make any additional amendments to the bill. As a result, a number of efforts were made to move companion legislation which would be "linked" to passage of SB 200. The only successful companion bill was Assembly Constitutional Amendment 90 authored by Assemblyman Kapiloff.

ACA 90 was voted on as Proposition 8 in the November 1980 statewide election. Although Proposition 8 was approved, ACA 90 specifically provides that it will have no force or effect unless SB 200 is enacted and takes effect. If the SB 200 referendum is defeated in June, the provisions of ACA 90 will also be defeated. On the other hand, the provisions of ACA 90 will be in effect whether or not any facilities are built, if Proposition 9 passes.

ACA 90 does four main things:

1. Certain provisions of SB 200 cannot be amended or repealed unless approved by the people of the State, and can be changed by a two-thirds vote of the Legislature only if the change does not reduce its protection of the Delta or fish and wildlife. These are provisions for the protection of fish and wildlife and Delta water rights and SB 200 requirements that the SWP be operated to comply with water quality standards and plans.

2. Water cannot be appropriated for export from the California Wild and Scenic River System without a vote of the people or a two-thirds vote of the Legislature.

3. The Delta Protection Act cannot be amended or repealed without a vote of the people, and can be changed by a two-thirds vote of the Legislature only if the change does not reduce the protection of the Delta or fish and wildlife.

4. State court litigation that in any way attacks SB 200 or any of its provisions will be expedited in several respects.

No estimates have been made of costs attributable to ACA 90.

ACA 90 was intended to give constitutional status and protection to some of the environmental protection provisions of SB 200 and to the North Coast rivers. However, neither ACA 90 nor SB 200 water quality provisions have any effect on the actual water quality standards set by the State Water Resources Control

Board. The Board continues to control those standards, and will in fact reconsider its current Decision 1485 standards in 1986 or before. ACA 90 and SB 200 may prevent the Legislature from changing Delta water quality standards, but the State Water Resources Control Board continues to have that power.

The environmental protections contained in ACA 90 are discussed at Section 9, below. The State court litigation which ACA 90 anticipates is discussed at Section 8A, below, as a source of foreseeable delay in building the Peripheral Canal.

7. Evaluating an Alternative to the Peripheral Canal - The "Orlob Plan"

A. Description of the Plan

Dr. G. T. Orlob prepared a proposal in 1981, for the Central Delta Water Agency entitled "Delta Water Transfer Without A Peripheral Canal". The Orlob proposal is similar to several of the alternatives studied by DWR in its 1975 Delta Alternatives Study. Dr. Orlob presented his "Alternative Water Transfer Plan" to the Task Force. Both Dr. Orlob and DWR have provided the Task Force with extensive analysis of the Alternative Plan and comparisons of the Alternative Plan and the Peripheral Canal, their costs and impacts.

The Alternative Plan is not as far along in detailed engineering work leading up to project working drawings as the Peripheral Canal. But, from the information provided to the Task Force, the concept appears to be sound and feasible.

The Alternative Plan facilities would make use of existing Delta channels. Instead of construction of a new man-made canal around the Delta, the Alternative would increase

the capacity of existing Delta channels as necessary to allow more water to move across the interior Delta to the SWP and CVP export pumps.

The Alternative Plan would increase the amount of water that can be diverted from the Sacramento River at the existing Delta Cross-Channel at Walnut Grove to channels in the interior Delta. Between 5,000 and 6,000 cubic feet per second can now be carried by the Cross-Channel. The Alternative Plan calls for a new pumping plant to be built near Walnut Grove (the exact location is not specified) which would have a diversion capacity of about 16,000 cubic feet per second. Sacramento River water would be lifted 1 or 2 feet. With this increased diversion, water would not have to be pulled back around Sherman Island to the export pumps. A fish screen could, if required, be installed at the intake structure and has been included in the cost estimates.

Dr. Orlob states that the Walnut Grove pump would need to be operated approximately 25% of the time. The pumps would be operated less in wet years and more in dry years. They would be operated only when Delta inflow is so low that export pumping would otherwise pull Sacramento River water back around Sherman Island. Pump operation would take into account the needs for protection of fisheries.

Some interior Delta channels would have to be enlarged and their levees set back to handle the additional water diverted from the Sacramento River, e.g., the upper end of the south and north forks of the Mokelumne River near the Sacramento River

diversion, and sections of Old River and Middle River near the export pumps. Dr. Orlob stated that the channel enlargements and levee setbacks can be engineered to eliminate channel scouring which otherwise would result from increased water velocities.

In addition to enlarging the channels of Old River and Middle River, "tidal pumps" would be installed to improve the circulation of water in South Delta channels. Circulation in those channels is poor because of low San Joaquin River flows and the effect of export pumping.

Installation of improved fish screens may be required at the existing export pumps. DWR asserts that the Alternative Plan would also have to include barriers in Sutter and Steamboat Sloughs to prevent the Sacramento River from reversing flow direction below Walnut Grove. Dr. Orlob responds that proper operation of the Alternative Plan would not create those reverse flows and that no barriers would be needed. SWRCB water quality standards and the North Delta Water Agency contract would in any event prohibit operation in a way which would create such reverse flows.

B. Yield Comparisons

DWR has estimated that the "yield" of the Peripheral Canal will be approximately 700,000 acre-feet per year. This yield is based on two factors: (1) the State and federal projects will not have to provide "carriage water" in order to maintain the quality of the Sacramento River water that is pulled back around Sherman Island to the export pumps; and (2)

project export pumping would not be as severely limited in May and June for fishery protection.

Dr. Orlob claims the Alternative Plan will provide at least the same yield as the Peripheral Canal, with better interior Delta water quality. DWR and Dr. Orlob agree that both plans would prevent the export pumps from drawing water from the Western Delta and that both plans would save the loss of "carriage water" and increase the water available for export.

It is speculative to try to compare the yields of the Canal and Alternative, since yield estimates depend completely on the assumptions made. DWR has made the claim that the Alternative Plan will provide only 550,000 acre-feet of yield per year instead of 700,000 acre-feet. It is important to understand the basis for DWR's claim, since it has been widely publicized, whether it is speculative or not. Its reasoning is based on water quality standards: D-1485 water quality standards limit export pumping in May and June of all years to 3,000 CFS each for the SWP and CVP, and in July to 4,700 CFS for the SWP. The purpose of this limitation is to minimize the diversion of young striped bass from the Delta. DWR estimates that that curtailment represents a loss of 150,000 acre-feet of yield from both projects, and argues that the SWP would be credited with that savings if the Peripheral Canal were built and a less drastic curtailment were imposed for the Peripheral Canal diversion at Hood.

These assumptions are speculative. The SWRCB has not indicated that it would change its standards for the

Peripheral Canal. In fact, no standards have been set for either the Canal or the Alternative or even discussed by the SWRCB. There is no non-speculative basis for comparing Peripheral Canal and Alternative Plan yields at this time. On the basis of evidence presented to the Task Force, it is clear only that both plans would save the same amount of carriage water absent action by the SWRCB.

C. Effect of Levee Failure

The continued integrity of the Delta levee system is an issue at the heart of the Peripheral Canal vs. Alternative Plan debate. DWR argues that there is a constant threat of levee failure in the Delta that will jeopardize SWP exports unless the Peripheral Canal is built. The argument has been made that continuing to take water through the interior Delta channels will assure the continued interest of DWR and SWP contractors in the protection and maintenance of Delta levees in the future. Keeping export water in the Delta "common pool" provides a physical guarantee that Delta water quality will be maintained and Delta levees will be protected to some extent, as opposed to a contractual, statutory, or constitutional guarantee.

The Delta interests argue that the Alternative Plan would provide multiple benefits for less capital investment than the isolated Canal. They argue that instead of building 84 miles of new levee to create the Peripheral Canal, existing levees should be improved, which would solve water transfer problems and part of the levee problems at the same time. They also argue that the impact of levee failures on export is small

with either plan, but would be less with the Alternative than with the Canal.

Some Delta islands in the Central and Western Delta are made of deep peat soils of various depths. Some levee foundations rest on the organic peat soils. The elevations of many islands are below sea level and are declining gradually where peat soils are present. Concern has been expressed that a major earthquake could breach many levees at the same time, although earthquake has never been identified as a cause of levee failure. DWR has stated that the Delta levee system "has a very small margin of safety" and that: "When a Delta levee fails under balanced flow conditions, the entire island floods drawing salt water into the Delta from Suisun Bay. Until the degraded water can be flushed from the Delta, diversions must be curtailed and in the worst case this may take several months."

The Burns-Porter Act (Water Code §12934(d)(3)) lists as "Delta transfer facilities" facilities for the "transfer of water across the Delta" and for "flood and salinity control". DWR included flood control and seepage control features in 2 of its 3 alternative "Delta Water Facilities" described in its first Bulletin 76 (1960). Those alternatives provided for master levees and improved flood and seepage control. DWR decided at that time to pursue its "Single Purpose Delta Water Project" which included no flood control benefits.

DWR's position has continued to be that Delta flood control should be treated as a separate problem from the Peripheral Canal and alternatives, and that the SWP should not

have to take on responsibility for Delta levees (whether DWR, as opposed to the SWP, has that responsibility or not). Responsibility for Delta levees and their maintenance is generally an unresolved issue, although DWR must continue to meet Delta water quality standards. DWR also has obligated itself in the North Delta Water Agency contract to make all reasonable efforts to restore water quality as soon as possible if a levee failure occurs.

There are several aspects of the "levee problem". First is the impact of a levee break on current SWP operations and the relative effectiveness of the Peripheral Canal or Alternative Plan to respond to protect Delta water quality. Second is the question whether export will be stopped if the Peripheral Canal is built. Other issues include to what extent the State is responsible for levee protection and maintenance.

The impact of a levee break on SWP operation depends on factors such as the location and time of the break and Delta outflow at that time. Dr. Orlob analyzed the effects of levee failures on Delta water quality for two incidents, the June 1972 Brannan-Andrus break and the September 1980 Lower Jones Tract break. The Brannan-Andrus break occurred with low outflow conditions during the summer. The Lower Jones Tract break occurred during relatively low flow conditions during September.

The Brannan-Andrus break was the most serious levee failure because it occurred during a time when outflow of fresh water was low. Approximately 50,000 acre-feet of water flooded the island within 48 hours. Saline water moved rapidly

upstream and intruded well into the Western Delta. In response to the break, export pumps were shut off and an additional 4,000 CFS was released from storage. The quality of export water was worse for about a 3-week period. Saline water was "trapped" in the Southwestern Delta near the export pumps; it could not be flushed out of the Delta, but instead had to be gradually exported and diverted by interior Delta users. Export of saltier water increased the average exported "salt load" for that period.

Dr. Orlob analyzed the possible consequences of a Brannan-Andrus and Lower Jones break if the Alternative Plan were in existence. He concluded that export water quality would not be jeopardized because the Alternative Plan could deliver large flows of high quality water into the interior Delta:

> "This provides both a hydraulic barrier to prevent salinity intrusion and a buffer to mitigate the effects of any salts that might be drawn into the Delta in the unlikely event of a levee failure during a critical summer period."

The capacity of the Alternative Plan to flush out salt water intrusion caused by a levee break would be greater than the Peripheral Canal's. The Peripheral Canal would, however, have the ability to release water directly into eastern and southern channels, which would be important in the event a levee failed in the South Delta.

So far as the effect of a levee break on export alone is concerned, without regard to Delta water quality standards or contract obligations, the Peripheral Canal would give the SWP the physical ability to continue exporting and the quality of export water would not be adversely affected. With

the Alternative Plan, some adverse effect on export quality could occur during low flow conditions. On the other hand, export could be completely stopped by a break in a Peripheral Canal levee or siphon.

Delta water users fear that a Peripheral Canal that is isolated from the Delta and therefore not vulnerable to problems caused by levee failure will allow the State to "walk away" from the Delta. The State's obligation to meet contracts and water quality standards to protect beneficial Delta uses is not avoided by levee failure.

A joint DWR-Corps of Engineers study is underway on alternatives for Delta flood control and related problems. The State provides matching funds to reclamation districts for levee repair and maintenance ("Way Bill"). However, the issue of the ultimate assignment of responsibility for Delta levees has not yet been resolved.

D. Water Quality Comparisons

Two aspects of water quality are involved, the quality of export water and of water in the Delta. The Peripheral Canal would assure that the quality of export water would be the same as Sacramento River water quality. Because the Alternative Plan is not isolated from the Delta, Sacramento River water would continue to mix with poorer quality waters. The Alternative Plan would be an improvement over existing export water quality, and would meet contractual export water quality requirements, however.

The Delta water quality aspect is more complicated. With the Alternative Plan, the Delta remains a "common pool" both for in-Delta users and for export. Export and Delta water quality would be the same. The project operators would be able to insure export water quality only by protecting Delta quality. DWR calls this "automatic protection".

The Peripheral Canal provides no "automatic protection" to Delta users. Delta users argue that they would have to rely on "institutional guarantees" contained in State and federal statutes and constitutional provisions, State Water Resources Control Board decisions, and contracts with Delta agencies which give Delta beneficial uses priority over export. The effectiveness of "institutional guarantees" is a question that has been intensely debated for more than 20 years, and will continue to be a central issue.

The Peripheral Canal cannot be built alone. Several related facilities must also be built. With the Peripheral Canal, good water quality would not be maintained automatically in the Western Delta. The Western Delta and Suisun Marsh would be supplied with overland facilities. The Contra Costa Canal Intake would have to be relocated to Clifton Court Forebay.

With the Alternative Plan, water quality in the Central and Southern Delta would be improved, and would be better quality than could be provided with the Peripheral Canal. The total release capacity from the Peripheral Canal would be 9,800 CFS versus the Alternative Plan movement of 16,000 CFS through

the interior Delta. (Although there is physical capability to release 9,800 CFS, DWR can release only 6,300 CFS at full export pumping rates.) The Contra Costa Canal Intake would not have to be moved, but overland facilities would still be needed in the Western Delta and Suisun Marsh.

E. Impact on Fisheries

The impact on fisheries of the Alternative Plan or Peripheral Canal will depend on many factors -- the effectiveness of fish screens, the velocity and direction of flow in Delta channels, circulation or stagnation in some channels, and Delta outflow.

The Department of Fish and Game has taken the position that the Peripheral Canal is the best Delta transfer facility for fish and wildlife. The DFG has compared the ability of the Peripheral Canal and Alternative Plan to meet fish and wildlife needs, and concluded that both plans would be an improvement over existing conditions since both would reduce the impact of export on the fishery by eliminating flow reversals in the San Joaquin River at Antioch, but that the Peripheral Canal would improve fisheries to a greater extent.

Both plans have risks to fish and wildlife resources. DFG states that the most critical factor for fish and wildlife is adequate Delta outflow, and both plans have the same physical capability to deplete resources by reducing Delta outflow below needed minimum flows. There are risks associated with building large, prototype fish screens on the Sacramento

River and with reducing flows in the Sacramento River below the Hood or Walnut Grove diversion points.

The Peripheral Canal's 14 interior Delta release points could provide positive downstream flows in all Delta channels except in the southernmost Delta. There may be stagnation and water temperature problems, however, in the Central and Southern Delta due to inadequate circulation. Upstream migrating fish may follow flows released from the 14 Peripheral Canal release points and may be "dead-ended" when they reach those release points. This may create serious fishery problems, in addition to the serious problems involved with the fish screen at the Hood diversion point. Existing fish screens at the export pumps would not be necessary, however. [See discussion at Section 4.]

Serious questions have also been raised with respect to the Alternative Plan. Increase in the velocity of water moving through Mokelumne, Old, and Middle River channels could decrease the number of fish-food organisms in those channels. Reverse flows would continue to exist in some Central and Southern Delta channels. Upstream migrating fish can be confused by reverse flows. It has been suggested that reverse flows could occur in Sutter and Steamboat Sloughs, but reverse flows in those sloughs would be prohibited by the North Delta Water Agency contract.

A fish screen may have to be installed at the Sacramento River diversion point. Upstream migrating fish could be attracted by the diverted Sacramento River water to the back

side of the fish screen. DFG has stated that there is no immediate technology available to solve that problem and estimates that 5 years of research and development might be needed.

Improved fish screens may also be required at the export pumps. DFG and DWR argue that the existing problem of diverting water directly out of a major nursery area would be exacerbated by increased exports.

Dr. Orlob responds that maximum channel velocities would be "in the range of 1 to 1.2 feet per second", and that constant circulation would be maintained in the interior and Southern Delta, minimizing stagnation, temperature increases, and reduced dissolved oxygen concentrations, all of which harm fish-food organisms.

The Sacramento River fish screen would be smaller for the Alternative Plan since the 16,000 CFS capacity is lower than the Peripheral Canal 21,800 CFS capacity. As for the problem of upstream migrants reaching the back of the fish screen, Dr. Orlob suggests that upstream passage "can be accomplished either by 'false' jumping down through a short drop of 1 to 2 feet or by sluicing of accumulated migrants, by periodic recirculation of some of the flow. Even periodic opening of the diversion facility to free passage of migrants is possible." The Alternative Plan does not create the same type of obstacle to fish as the Peripheral Canal release points, for which physical removal and transfer of fish may be required.

Finally, Dr. Orlob has stated that improvement of export fish screens may be necessary.

Dr. Orlob urges that there are not substantial differences between the plans' fishery impacts, and "There are good and bad features in both plans, [and] neither will do all the DFG would like." The dominant concern for net Delta outflow is not directly a matter of which plan is chosen and there is, as yet, no completely satisfactory solution to the fish screen problem in either case.

Dr. Orlob also criticizes DFG's "unfortunate choice" of striped bass as the main indicator of fishery conditions in the Delta, and argues that the commercially more important salmon should be the prime indicator instead. Salmon are mainly affected in the Delta by what happens to the Sacramento River. Dr. Orlob's comments raise the question whether potential harm to the Sacramento River salmon run should not outweigh continued harm to the San Joaquin nursery areas. The Peripheral Canal would eliminate pumping influence on an area which comprises only about 14% of the striped bass spawning area, but has uncalculated potential of harming the Sacramento River salmon fishery.

The Alternative Plan would pump water from the Sacramento River only 25% of the time, with a lower lift than for the Peripheral Canal. These factors would mean that the Alternative Plan would have much less impact on the Sacramento River fishery according to Dr. Orlob. The DFG agrees that there is an increased threat to Sacramento River fish with the

Peripheral Canal, but has not compared the effect of the two plans.

F. Cost Comparisons

The relative cost of the Alternative Plan and Peripheral Canal have been debated at length. Dr. Orlob has prepared estimates in 1981 dollars for the Alternative Plan, which do not include interest costs:

Estimated Cost of Alternative Plan
(1981 dollars, in millions)

	A Alternative, using present technology for fishery protection	B Alternative, using fishery protection recommended by DFG
Sacramento River Intake Structure	34.99	107.31
Diversion Canal (A=1.5 mi.; B=5 mi.)	4.67	12.83
Pumping Plant (16,000 CFS)	46.66	46.66
North Delta Channel Improvements	2.33	2.33
North Delta Levee Setbacks, Mokelumne River Improvements	4.67	4.67
Georgiana Slough Improvements	7.00	7.00
South Delta Channel Improvements	9.33	9.33
Tidal Pumps	10.50	10.50
Tom Paine Diversion Canal	1.17	1.17
Improved Clifton Court Intake and Fish Screen	23.22	58.32
Rights-of-Way and Relocations	12.83	17.50
Design, Construction Supervision, Contingencies at 35%	50.16	92.15
TOTAL	207.53	369.77

These estimates (in 1981 dollars) can be compared with DWR 1981 dollar estimates of $680 million for the Peripheral Canal plus $36 million for South Delta Water Quality Improvement Facilities.

Dr. Orlob has provided escalated cost figures assuming a 1981-1986 construction schedule, at a 9% compounded rate for construction cost increases, of $269 million for Alternative "A" and $479.5 million for Alternative "B". These figures can be compared with DWR's escalated Peripheral Canal costs of $1.289 billion plus an additional escalated cost estimate of $87 million for South Delta Water Quality Improvement Facilities. DWR has prepared a document "DWR Position on the Alternative Water Transfer Plan Proposed by the Central Delta Water Agency" (February, 1982), which propounds a different basis for comparing Peripheral Canal and Alternative Plan cost estimates. [See discussion of yield comparisons at Section 7B, above.] The Task Force has reservations concerning DWR's document and questions the validity of the assumptions DWR bases its comparisons on.

G. Comparison of Construction Schedules

DWR's most optimistic schedule for building the Peripheral Canal is 1983-1988 for Stage 1, 1986-1992 for Stage 2, and 1988-1993 for Stage 3. Dr. Orlob has estimated that construction of the Alternative Plan would take 3 years, although he has provided cost estimates based on a 6-year construction schedule. Testimony indicated that the Peripheral Canal and Alternative Plan may require additional research and development time related to fish screens.

H. Contra Costa Canal Intake

SB 200 provides for the relocation of the Contra Costa Canal intake. The intake would not have to be relocated if the Alternative Plan were used.

I. Seepage Impacts

Some additional seepage is anticipated with the Alternative Plan, since water levels in some Delta channels would be slightly raised the 25% of the time the system would be operating. The additional seepage would be less than 5% of that which would be caused by the Peripheral Canal, according to Dr. Orlob.

The Peripheral Canal would be an unlined earthen ditch carrying water 10 feet above adjacent land. Dr. Orlob estimates that between 5,000 and 20,000 acres may be "destroyed" by seepage from the Peripheral Canal.

J. Rights-of-Way Required

Rights-of-way for the Alternative Plan would require between 400 and 1,000 acres. The Peripheral Canal would require 6,570 acres, construction of major bridges, and relocation of utility facilities. Both rights-of-way are through prime agricultural land.

K. Interference With Flood Flows

The Alternative Plan includes channel improvements which would provide additional flood capacity in about 32 miles of Delta channels in the North and South Delta. No existing channels would be blocked or constricted.

The Peripheral Canal may increase the possibility of flooding problems in the South and East Delta. The Canal would completely block Middle River and constrict the Mokelumne River Floodway.

8. Building the Peripheral Canal

A. Foreseeable Litigation-Caused Delays

A significant factor in the cost of any public works project is delay. Delay ordinarily results in increased construction costs. Various delays are foreseeable concerning SB 200, including funding and construction delays, CEQA- and NEPA-related delays, delays caused by litigation, and delays required by provisions in SB 200 itself.

Delay in the construction of the Peripheral Canal caused by litigation has been widely anticipated. (Litigation-caused delay should similarly be anticipated if the Alternative Plan were to be built.) ACA 90 specifically provides for expedited handling of likely lawsuits filed in State courts, but not suits filed in federal courts, where many suits may be brought. The ACA 90 provisions form the nucleus of a lengthy list described for the Task Force by Senator Rains.

ACA 90 would require any state court action attacking any provision of SB 200 to be filed generally within one year of the effective date of SB 200 in Sacramento Superior Court, and to be given preference over other matters. At the request of any party, the California Supreme Court would be required to transfer a case to itself, before a decision in the Court of Appeal, unless the action would not substantially affect Peripheral Canal

construction, compliance with water quality standards or contracts, or compliance with the DWR-DFG permanent fish and wildlife agreement.

ACA 90's list of potential state court anti-Canal lawsuits covers many possible actions. ACA 90 refers broadly to any "action or proceeding to attack, review, set aside, void, or annul any provision of" SB 200. Senator Rains suggests that several of the lawsuits which can be expected to be raised under this description are (1) that SB 200 is constitutionally void due to uncertainty and vagueness; (2) that SB 200 environmental and Delta water quality provisions impair SWP contracts and Burns-Porter Act bond security; and (3) that SB 200 violates the California Constitution Article X Section 2 requirement that water be put to reasonable and beneficial use and not wasted.

Similar language in ACA 90 refers to any action to attack the joint DWR and DFG determination after the 2-year test period that the Peripheral Canal Stage 1 fish screen and operating criteria are adequate. The directors' determination would raise factual issues which could require a long and complicated trial.

ACA 90 attempts to cover all Peripheral Canal-related litigation, any "action or proceeding which would have the effect of attacking, reviewing, preventing, or substantially delaying the construction, operation, or maintenance of the Peripheral Canal." This language would include all California Environmental Quality Act (CEQA) litigation. It would also include lawsuits brought on the basis of a California Constitution Article X

Section 2 claim that water conservation should precede any construction.

ACA 90 would also expedite actions that would be brought to require DWR to operate the SWP to meet Delta water quality standards, basin plans, and Delta contracts. More than a dozen lawsuits have already been filed on various Delta water quality issues, and more should be expected. These possible lawsuits may or may not affect Canal construction schedules.

Litigation requiring DWR to comply with the DWR-DFG permanent fish and wildlife agreement are covered by ACA 90, and would directly affect Canal construction. Construction cannot start until the agreement is signed. An EIR is being prepared on the agreement, which could be the subject of a secondary avenue of attack. The "historical level" concept to be embodied in the agreement is nebulous, and invites litigation.

Finally, ACA 90 expedites actions brought to require DWR to comply with contracts with the eight Delta water agencies. Such actions would probably be complex.

There are numerous foreseeable lawsuits that ACA 90 does not cover which could affect construction. Senator Rains indicated that:

> "One of the most potentially prolific sources of issues that could delay the start of construction or even halt construction of the Canal in its tracks involves the financing arrangements, or lack thereof, to pay for the Canal and other SB 200 facilities."

Serious challenges have been made to the use of property taxes, tidelands funds are uncertain, and there are questions concerning

use of the same security for new revenue bond issues as for outstanding general obligation bonds.

A second broad area not encompassed by ACA 90 concerns the relationship between the federal CVP and the SWP and Peripheral Canal. The Department of Interior and Bureau of Reclamation have taken a neutral position on the Canal. SB 200 states that DWR may not carry water for the CVP through the Canal until there is either Congressional legislation or the Secretary of the Interior enters into a permanent contract with DWR that requires the CVP to be operated to meet water quality standards. A permanent agreement between the United States and the State must be entered into on "historical level" fish and wildlife requirements. If those actions are not taken and DWR carries federal water through the Canal anyway, whether pursuant to a SWRCB order or not, litigation should be anticipated. There may be very basic water rights problems involved as well. [See discussion at Section 8C, below.]

Finally, various condemnation and inverse condemnation actions, and other miscellaneous actions must be expected. It cannot be anticipated with certainty which actions would delay construction and which would not. The range of possible actions is so broad, however, that delays are probable.

B. What if the Fish Screen Doesn't Work?

SB 200 requires DWR to construct Stage 1 of the Peripheral Canal and to operate that portion of the Canal for a two-year period to test the fish screen at the Sacramento River intake to establish adequate fish screen operational criteria.

The last stage of the Peripheral Canal can only be constructed if the Directors of DWR and DFG both determine from the results of the trial period "that the fish screen and operational criteria will adequately protect the fish population." [Water Code §11255(a).]

The fish screen that will be tested during the 2-year trial period would not be the eventual full-size screen. The trial period would test a screen with a 5,450 CFS capacity, which is only one-fourth the size of the final 21,800 CFS capacity screen. DFG acknowledges that significant extrapolation and judgment will be involved in determining whether a fish screen that is four times larger than the screen being tested will work.

Testimony at Task Force hearings indicated that there is no fish screen in existence of the type contemplated for the Sacramento intake to the Peripheral Canal. The most recent status of work on the fish screen was requested from DWR and DFG, who report that their consultants will be meeting in April to select a design for the Stage 1 fish screen. DFG stated that it expects a recommendation will be made to the DWR and DFG Directors in June. The Task Force believes that this draft agreement (and any other agreements contemplated in SB 200) should be made available to the voters before the June election.

DFG had at one time indicated that the "logical course" would be to study the screen and demonstrate that an adequate fish screen could be built before construction of the Peripheral Canal. However, SB 200 mandates construction of the Canal first, followed by testing of a smaller fish screen in place.

A major issue is whether Stage 1 of the Peripheral Canal would continue to be used if the Directors of DWR and DFG determined after the two-year trial period that the fish screen and operational criteria would not adequately protect fish populations. SB 200 states only that Stage 3 would be constructed when the determination is made that the screen is adequate. SB 200 does not expressly state that Stage 1 would not be used if that determination were made. [An opinion has been requested from the Legislative Counsel on this issue.]

DWR takes the position that it can operate Stage 1 of the Canal even if the fish screen does not work.

DWR argues that the main problem with the fish screen is going to be to maintain hydraulic capacity, that they know the fish can be screened but they don't know if they can both screen fish and divert enough water.

DFG believes that it is "inconceivable" that the fish screen won't work. It states that Stage 1 would not be abandoned, but that any necessary physical changes would be made to make it work. (A substantial contingency reserve should perhaps be created to cover possible modification costs.) DFG agrees with DWR that the worst possible case would be to have only Stage 1, with one-quarter pumping capacity and one-quarter screen capacity, but that Stage 1 could still be used.

The Task Force believes that if the purpose of the fish screens is to protect fish in the Sacramento River, a determination that the screens did not work would logically stop the use of the screens and would consequently stop the use of

Stage 1. The Legislative intent arguably agrees with that conclusion. That conclusion could also possibly be imposed in the course of CEQA/NEPA litigation, as well. The contrary argument, that political pressures would not allow the abandonment of the expensive Stage 1 facilities, is not persuasive.

C. The Peripheral Canal will carry federal water whether the Federal Government participates or not.

DWR has stated that it will wheel CVP water through the Peripheral Canal whether or not the United States participates financially. The November 1980 Draft Memorandum of Agreement between DFG and DWR also provides that, if the Peripheral Canal is completed without federal participation, "the Project will transport as much of the CVP export water through the Peripheral Canal for release into Old River at Clifton Court as is practical and legally permissible."

DWR takes the position that DWR must carry CVP water because it "can't do anything else physically". CVP water can be delivered either to Old River or to Clifton Court Forebay. The CVP pumps would be moved to Clifton Court only if the federal government were to agree to the terms in SB 200 which control federal use of the Peripheral Canal.

SB 200 specifically provides that DWR "shall not transport water for the federal Central Valley Project through project facilities, including the Peripheral Canal" until the United States agrees to full coordination of CVP and SWP operations, in compliance with water quality standards, and to a permanent federal-state fish and wildlife historical levels

agreement. DWR may otherwise wheel CVP water through the Peripheral Canal only under limited exceptions, or if ordered to do so by the State Water Resources Control Board. The SWRCB might order the SWP to carry federal water through the Peripheral Canal for fish protection purposes.

DWR argues that it would not be wheeling CVP water "for" the federal government, and that SB 200 does not prevent DWR from transporting water "of" the CVP. The reason for not allowing DWR to transport water "for" the CVP, according to DWR, was to prevent the federal government from using available capacity in the California Aqueduct. The CVP Delta-Mendota Canal has no additional capacity with which to carry yield created by the Peripheral Canal. DWR states that the intent of SB 200 was to prevent DWR from carrying CVP water to increase the CVP's export capacity. DWR and DFG also argue that CVP water would have to be carried by the Peripheral Canal to protect fisheries.

DWR's stated position is that it is "inconceivable" that the Bureau of Reclamation would not meet the SB 200 Section 7 requirements if it were to receive wheeling benefits. SWP contractor Kern County Water Agency expects that the federal government will participate "as a matter of comity" since the SWP and CVP "are both in the Delta together".

What is meant by "participation" is not spelled out in SB 200. DWR describes the yield of the Peripheral Canal as relatively very inexpensive yield (although when compared to the cost of existing facilities, it is substantially more expensive than existing yield), and believes the Bureau of Reclamation will

want to participate in order to obtain a share of that yield. DWR may be willing to agree to wheel CVP water, but may decide not to sell any Peripheral Canal yield to the CVP. No conclusion can be drawn as to the ultimate nature of federal participation, or as to whether the federal government ever will agree to the SB 200 terms.

The Bureau of Reclamation's present position is that it has been and is now cooperating with the SWP, but will "sit on the fence" on the Peripheral Canal and SB 200 vote. SB 200 requires either Congressional legislation be enacted or the Interior Secretary enter into a permanent contract with DWR for "full coordination" of the CVP and SWP in compliance with Delta water quality standards. The Bureau's Regional Director Catino stated that the United States cannot meet D-1485 Delta water quality standards without Congressional authorization. (Congressional authorization was a precondition to construction of the Peripheral Canal in SB 346, the predecessor of SB 200.)

In a strong letter written in February to the Central Valley Project Water Association, the Department of the Interior stated that its position has consistently been that the Interior Secretary "must have control of the CVP water supply so he can allocate a firm water supply to the CVP water users and thereby guarantee repayment of the project as mandated by the Congress. This will continue to be our position." The letter states firmly that the "Bureau has never agreed to support legislation which would make CVP operations subservient to the SWRCB."

The Bureau's position is based on the observation that:

> "If the CVP were subjected to any and all future SWRCB decisions on water quality, minimum fishery releases, etc., without any authority vested in the Secretary, the CVP water supply would vary or change with each new action by the SWRCB. Therefore, a CVP water user would be placed in a position of having water from the project available only on a year-to-year basis. The SWRCB could revise the CVP operational plan and reduce the supply available to each water user. I doubt that most water users would make the tremendous investments necessary to get the water to the farmer with an uncertain or nonfirm water supply."

Finally, the Interior Department letter states unequivocally:

> "We wish to assure you that we have no intention of resolving the Delta water quality issue at the Federal water users' expense. We can also assure you that no legislation will be proposed to the Congress by this Administration without a broad consensus first being attained among California's various water interests."

Federal-state negotiations concerning the coordinated operation of the projects have been going on for several years. DWR indicates that final agreement on a "Coordinated Operating Agreement" may be reached by August. Director Catino stated that no agreement will be finalized until after the vote on Proposition 9.

Mr. Catino also stated that, although the federal government does not take a position on SB 200, there must be a better facility to get water through or around the Delta in order to be able to deliver the yield from an enlarged Shasta reservoir, for example.

There is, finally, no definitive answer to the question of whether the SWP could legally wheel CVP water through the

Peripheral Canal without federal "participation". It is also not clear whether or when the federal government might agree to the terms of SB 200 in order jointly to use the Canal.

D. The CEQA and NEPA requirements - If SB 200 passes, must the Peripheral Canal be built? Could a smaller or alternate Delta transfer facility be built instead?

The California Environmental Quality Act (CEQA) requires that DWR prepare an environmental impact report (EIR) for the Peripheral Canal and any other facility or project it would build or carry out. SB 200 specifically states that CEQA must be complied with (Water Code §11255), and Water Code §11258 requires that an EIR on the Canal include "a discussion of the sources of the mineral, nutrient, and biological components of the Sacramento River". DWR must evaluate impacts the Canal might have on those components and must mitigate adverse effects "to the extent practicable". Presumably Section 11258 does not limit the scope of the Canal EIR.

It should be anticipated that CEQA litigation would be filed. [See Section 8A, above.] The most likely assertions are that less environmentally harmful alternatives are available which should be constructed instead of the Peripheral Canal, and that water conservation measures should precede any construction.

CEQA lawsuits can be circumvented by the Legislature. It is within the Legislature's power to amend CEQA if a CEQA action were blocking implementation of SB 200.

The National Environmental Protection Act (NEPA) requires that an environmental impact statement (EIS) be prepared for federal projects. A federal EIS would have to be prepared on

the Peripheral Canal for at least one reason, that Corps of Engineers permits are required for the Canal. NEPA litigation would be brought in federal court and would not be expedited by ACA 90, and NEPA could not be avoided by the California Legislature.

The Task Force has raised an important question which it has not been able fully to answer. That is, if an EIR is prepared on the Peripheral Canal project, and adverse environmental impacts are identified and mitigation could be achieved only by building a different Delta transfer facility, would the Peripheral Canal be built anyway? Does SB 200 require that the Canal be built notwithstanding CEQA (and NEPA) by requiring that DWR "immediately proceed with activities prerequisite to [Canal] . . . construction . . . and . . . complete the design and commence construction as soon as possible"?

The Legislative Counsel has concluded that if SB 200 is approved by the voters, the Peripheral Canal is not the only Delta water facility authorized to be constructed. That opinion is based on the fact that SB 200 provides that the "Delta water facilities" authorized in the Burns-Porter Act includes a "peripheral canal unit" as described in SB 200. But nothing in SB 200 expressly restricts Burns-Porter Act Delta water facilities to the Peripheral Canal, and there is nothing in SB 200 that prohibits the construction of additional Delta water facilities.

9. How Good Are SB 200/ACA 90 Environmental Protections? What if Water Quality Standards Change?

SB 200 and ACA 90 contain a number of provisions which proponents refer to as environmental protection provisions. These can be divided into two categories: (1) SB 200 provisions which require that certain agreements be made or which define certain SWP obligations; and (2) ACA 90 provisions which make it more difficult to reduce or repeal certain protections.

Before Stage 1 of the Peripheral Canal or the Mid-Valley Canal could be built, DWR and DFG must enter into a permanent agreement to protect fish and wildlife and to restore, maintain, and possibly enhance, adult populations of fish and wildlife at "historical levels" in the Delta, Suisun Marsh, and San Francisco Bay. Three main criticisms of this requirement have been stated: (1) that the directors of DWR and DFG are political appointees who are firm Canal supporters; (2) that "historical levels" is a vague concept and it would be very difficult to evaluate what "historical levels" are or whether operating plans would actually restore fish and wildlife to "historical levels"; and (3) if DWR or DFG breach their agreement in some way, who would sue to enforce the agreement?

After Stage 1 is built, the fish screen would be tested for two years. No screen efficiency requirements are mandated by SB 200. DWR and DFG alone decide whether the fish screen will be adequate. SB 200 does not specifically state that Stage 1 could not be used even if the screens were not adequate.

SB 200 requires DWR to enter into permanent and enforceable water rights and water quality contracts with Delta water agencies for only 2/3 of the Delta and Suisun Marsh within those agencies. One-third of the Delta could be left without a contract. The guidelines as to what the contracts must contain are vague, and mention only quality, preservation of only present uses, and provide that the contracts would limit only export from the Delta. ACA 90 would prevent condemnation of contract rights by public agencies, but enforcing the contracts might be difficult in drought emergencies and contractual rights may still be subject to the police power in the event of emergencies and to various attacks from competing interests.

Before water can be transported for the federal government, the United States must agree to meet Delta water quality standards and fish and wildlife "historical level" requirements. SB 200 excepts from these requirements transportation of CVP water under existing wheeling contracts, for the San Felipe Unit, and pursuant to SWRCB order. These exceptions could be broadly interpreted. [See discussion at Section 8C, above.]

Finally, SB 200 requires the SWP to be operated to meet Delta water quality standards and to "rectify" any failure of the CVP to help meet standards. SWRCB standards can be changed by the SWRCB at any time. In fact, the SWRCB plans to reopen the Delta water quality standards hearings by 1986, and possibly sooner if Proposition 9 passes. SWRCB standards have been challenged in numerous lawsuits.

ACA 90 attempts to make it more difficult to reduce or repeal Delta protection provisions in SB 200, and additionally makes it more difficult to develop north coast rivers. Delta protection cannot be weakened except by a majority vote of the people. North coast rivers cannot be developed without either a majority vote of the people or a 2/3 vote of the Legislature.

Opinions on how strong ACA 90 voting provisions are depend on political power and voting strength. The Metropolitan Water District of Southern California has confidently expressed the opinion that it can muster the necessary votes to develop the north coast and change Delta protection when it needs to.

San Joaquin Valley farmers and others, however, have taken the position that ACA 90 is an extremely serious threat to water development. They do not have the voting strength MWD is relying upon.

10. What Are Future Water Demands and Supplies in the SWP Service Area?

A. What are MWD and Southern California future demands and supplies?

Despite the fact that information on future water needs is critical to SB 200, such information is extremely difficult to obtain. Demand estimates depend on such imprecise factors as population, population trends, the density of development, and trends in per capita consumption. No single set of demand estimates have been generally accepted.

An important debate is going on between the Metropolitan Water District of Southern California (MWD) and others on future demands and supplies in the Southern California

SWP service area. MWD argues that by 1985 or 1990, it will need the additional water that the Peripheral Canal would develop.

Conversely, others argue that MWD will not need additional SWP yield that soon or possibly at all, and that alternative Delta facilities, increased conservation, possible purchase of water that might be conserved by the Imperial Irrigation District, and other options should be pursued instead. They argue that a less conservative analysis of drought year risks should be used. Finally, they conclude that the Peripheral Canal would not be necessary, because demands will be less than projected by MWD and dependable supplies are larger than projected by MWD.

The office of the General Manager of MWD has prepared an estimate of future drought year demands and supplies, dated March 3, 1982. That MWD document concludes that there will be a shortage in MWD's supplies by the year 1990, if 1990 is as dry as 1977, the driest year in California's history. The total shortage projected by MWD is 750,000 acre-feet. This may seem to be a large figure, even if it were generally accepted. However, that figure represents only a 23% shortage overall in the MWD service area in a critically dry year. Shortages significantly in excess of 23% were experienced in many parts of California during 1977.

MWD estimates it will have to meet 1990 demands of 1.8 MAF. This figure was derived as follows:

Southern California 1990 service area demands	3.3 MAF
Less probable local supplies (principally groundwater)	(1.2 MAF)
Less 1977 L.A. Aqueduct imports	(.3 MAF)
Net 1990 MWD demands	1.8 MAF

MWD's demand projections apparently do not reflect expected savings from conservation. SB 200 estimates that water conservation and wastewater reclamation will total 700,000 acre-feet in SWP service areas by the year 2000. Of that amount, approximately 600,000 acre-feet would be accomplished in Southern California. The Task Force believes that conservation figures should be applied to reduce projected demand estimates.

MWD's demand projections have been criticized by MWD's former principal economist, John Burnham. Mr. Burnham notes that MWD's demand projections have been based on projected increases in Southern California population, from 12 million people in 1980, to 15 million in year 2000. He does not dispute those projections, but he does raise serious questions about MWD's conclusion that while population is increasing by 25%, urban water use is projected to increase by 33%.

He argues that that disparity is unrealistic for two reasons. One, there is a definite trend toward reduced per capita consumption that will result from expected increased population density (fewer single-family residences, more apartment and condominium development). Two, various water

saving devices are now required by law which will considerably reduce per capita consumption by the year 2000. Mr. Burnham concludes that "urban water use will increase between now and 2000 less rapidly than population, instead of more rapidly."

MWD has consistently substantially overestimated future demands. When it signed its SWP contract in 1960, it was projecting that it would need 2,011,500 acre-feet by 1990. MWD now estimates that it would need only 1,350,000 acre-feet of SWP water in 1990.

Further questions have been raised regarding uses of MWD water. MWD serves some water to agricultural users and for groundwater replenishment, as surplus water. Mr. Burnham contends that: "These purposes can and should be served when convenient, but are not the proper basis for demanding that new facilities be built." The fact that replenished groundwater is pumped primarily for urban uses "still does not justify building facilities to insure that water will be available for replenishment every year. The main purpose of the [replenishment] program is to reduce the need for a constant supply by allowing surplus water to be conserved in wet years for use during dry years."

These issues concern demand questions. There are also widely differing evaluations of future water supplies for Southern California.

MWD estimates that it would have a firm supply of 1,050,000 acre-feet in 1990, if 1990 were a critically dry year. This supply is made up of a net Colorado River supply of 450,000

acre-feet, and a SWP supply of 600,000 acre-feet (actual 1977 MWD deliveries of 200,000 acre-feet plus 400,000 acre-feet of water exchanged in 1977 with San Joaquin farmers).

It is uncertain what amount of Colorado River water will be available to MWD after the Central Arizona Project (CAP) comes on line in 1985. The U.S. Supreme Court's 1963 decision in Arizona v. California allotted California 4.4 million acre-feet (MAF) per year, and Colorado Desert farmers (mainly Coachella and Imperial) have rights to 3.85 MAF per year which are prior in time to MWD's 1.2 MAF right. When the CAP starts operating, MWD rights will be limited to 550,000 acre-feet per year (the difference between 4.4 MAF and 3.85 MAF). (This allocation may be reduced by conveyance losses and Indian water rights claims.) Since MWD is now diverting only about 800,000 acre-feet per year from the Colorado River, its actual present use would be reduced by only approximately 350,000 acre-feet per year. MWD assumes CAP use will build up by about 1990.

Arguments have been made that there may be surplus Colorado River water available in many years and that MWD will be able to divert that surplus. Questions involving Colorado River yield are very complex, and the details of Colorado River "banking" programs are difficult to evaluate. The Task Force has not received enough information to assess those arguments, but believes that possible purchase of Colorado River water, "banking" programs, and the availability of surplus supplies should be thoroughly investigated and pursued.

MWD's expected SWP supply is based on 1977 critical drought conditions. Even DWR calculates firm yield on the basis of the less severe 1928-1934 drought period.

The SWP delivered 698,000 acre-feet to MWD in 1981. This amount is well below MWD's 1981 contract entitlement of 1,157,300 acre-feet. MWD's contract entitlements will be at their maximum by 1990, 2,011,500 acre-feet per year. The SWP will not have sufficient yield without additional development to meet that maximum entitlement, however. DWR estimates that the SWP would be able to deliver to Southern California 1,250,000 acre-feet in 1990, of which approximately 1 MAF would go to MWD.

There is a large discrepancy of approximately 400,000 acre-feet, therefore, between MWD's 1977-based estimate and DWR's 1928-1934-based estimate which cannot be reconciled. Even this difference would reduce MWD's estimated 23% deficiency to about a 12% deficiency in a year as dry as the driest year California has ever experienced. In 1977, Los Angeles set conservation goals of 25%, and the State's 1977 Drought Emergency Task Force estimated that it would not have to put emergency plans into effect until water supplies fell below about one-half of normal minimum per person use.

One of the most far-reaching criticisms of MWD's supply estimates has been raised by Mr. Burnham. He argues that MWD is being far too conservative in the way it is applying "firm yield" concepts. Southern California has five firm sources of water supplies: local groundwater basins, local surface water, the Los Angeles Aqueduct, the MWD Colorado River Aqueduct, and the SWP.

Mr. Burnham's basic thesis is that with five separate sources of supply, "it is proper to plan not on the basis of firm yield from each source, but on a basis approaching average yield." If one or several supplies are reduced because of drought, groundwater pumping could be increased for the drought period, for example, and replenished in wetter years. He urged MWD to analyze water supplies in insurance terms, using probability analysis of the risk that one or more sources would be reduced, to determine whether the insurance benefits that would be obtained are worth the cost. Mr. Burnham testified that the probability that all five of Southern California's supplies would be severely reduced in one year is 1 in 2740.

Demand and supply estimates are very critical factors in considering SB 200. No figures are generally agreed upon for Southern California. The Task Force has not been able to ascertain what the best supply and demand estimates are, but it believes that MWD's assumptions and estimates are clearly questionable. If additional water is actually needed in Southern California by 1990, however, it should be noted that the Peripheral Canal is not scheduled to be completed until 1994. An alternative through-Delta plan, such as the one presented to the Task Force by Dr. Orlob, apparently could be completed before that date.

B. What will the San Joaquin Valley need?

Bulletin 132-81 shows that San Joaquin Valley contractors have generally requested water deliveries in excess of their SWP contract entitlements. When delivered, SWP "surplus

water" over entitlement amounts is paid for pursuant to long-standing surplus water contracts. Delivery of surplus water is part of the total SWP program.

Except during periods of drought, water in excess of the SWP firm yield is available to the SWP in the Sacramento-San Joaquin Delta. Such unscheduled water is available only after meeting water rights of users in and upstream from the Delta, prior rights of the CVP, Delta outflow requirements established by the SWRCB under its Decision 1485, and SWP entitlements. All SWP supplies are first made available to meet requests for contract entitlement water. Any excess supplies are then made available to SWP contractors as "surplus water" and paid for at the incremental cost of delivering such water.

DWR Bulletin 160-74 (November, 1974), the Bookman-Edmonston Report on Water Resources Management in the Southern San Joaquin Valley (January, 1979), and other sources indicate that the current water demand is in excess of the current dependable water supply in the area by approximately 1.5 MAF annually. This deficiency is met by overdraft of groundwater in the same amount. There is not sufficient additional SWP supply available to the San Joaquin Valley to offset the present overdraft.

Unless additional water supplies are made available to the San Joaquin Valley, one of two things is likely to result. Either groundwater levels will continue to drop, with consequent increases in the cost of groundwater pumping, or substantial

acreage will be taken out of production. Some combination of these undesirable alternatives is most likely.

The Task Force feels the evidence presented demonstrates immediate needs for imported agricultural water in the San Joaquin Valley. However, the Task Force believes there are substantial constraints on agriculture's ability to pay for such supplies.

The conclusions necessarily drawn from these findings are that agriculture needs its water as soon as possible and at the cheapest affordable cost.

11. Is it possible to avoid additional export by economic, conservation, or legal and institutional changes?

The vote on Proposition 9 will dictate to a great extent future water development policy in California. It is a "watershed" decision either to proceed with the construction of more facilities to develop new yield in the magnitude proposed by SB 200 or to change direction and evaluate much more closely the potential for increasing supplies and reducing demand by less traditional measures.

Every alternative to additional facilities for export of water should be fully studied. Water conservation, wastewater and salt water reclamation, water banking, water transfers, and conjunctive use of groundwater basins to store supplemental surface water are important now, and will become increasingly important in the future. Besides possible implementation of physical programs for conservation, reclamation, and groundwater storage, there may be beneficial changes which can be made in the

legal and institutional systems for water rights and management which could lessen total demand.

DWR has given considerable attention to the less traditional approaches to meeting water needs. Bulletin 76-81 describes in detail many potential conservation, reclamation, groundwater storage, and water banking and exchange programs.

The Task Force has discussed only a few of the potential conservation-related measures which might be pursued. It appears that very substantial reductions in urban demand have resulted and can continue to increase from water conservation. The potential savings from agricultural water conservation are more speculative, but some conservation is unquestionably feasible.

Groundwater storage may also provide substantial yields. It appears that there is, however, considerable institutional and political resistance to the storage by DWR of SWP water in groundwater basins. The source of at least some of that resistance apparently stems from the fact that the more SWP water DWR stores in groundwater basins, the less "surplus" water will be available to San Joaquin Valley contractors.

Water transfer is highly touted by economists as a way to reduce overall demand. Transfers were extremely important during the 1976-1977 drought and are important this year to mitigate the consequences of the San Luis dam failure. Water transfer, however, must be linked to strong provisions for the protection of the areas of origin of the transferred water.

The Task Force has been impressed by how much water could be saved (or how large the reductions in demand could be) as a

result of conservation-type measures. SB 200 contains estimates of a 400,000 acre-feet per year yield from groundwater storage programs, and 700,000 acre-feet per year from urban water conservation and wastewater reclamation.

DWR has published a report on potential savings in the Imperial Irrigation District (IID). IID diverts approximately 2.8 MAF per year from the Colorado River. After use by IID farmers, approximately 1.1 MAF wastes into the Salton Sea. DWR investigated IID operations and concluded that there is an overall opportunity for saving about 438,000 acre-feet of water per year. Water losses are occurring mainly from seepage from unlined canals, spillage from canals where more water is ordered than can be used, and on-farm losses.

The relationship between water conservation figures and projected demands is treated differently by various groups. The Task Force believes that conservation estimates should be used to offset projected demands. DWR's and MWD's refusal to decrease demand estimates by projected conservation estimates does not seem to be a logical approach. Conservation can clearly reduce ultimate demand.

12. <u>If Proposition 9 does not pass, can the Peripheral Canal be built anyway or some of the other SB 200 facilities? The Alternative Plan?</u>

The Legislative Counsel prepared an opinion on these questions. The Counsel concluded that, even if SB 200 is rejected by the voters, DWR is authorized under existing law (the

Burns-Porter Act) to build the Peripheral Canal as part of the SWP. DWR has "broad authority" over project construction and the choice of which particular facilities of the project are built. The Legislative Counsel stated that "we think it is clear that the courts would not interfere with the determination of the Department to construct a 'Peripheral Canal' under the Burns-Porter Act authorization of facilities for 'transfer of water across the Delta'."

In response to a separate question, the Legislative Counsel also stated that Glenn Reservoir could be built by DWR even if SB 200 is rejected by the voters. That authority comes from DWR's broad authority to build additional SWP facilities to augment water supplies in the Delta.

The Legislative Counsel also testified that the Alternate Plan could be built even if Proposition 9 does not pass. The same "broad authority" that would allow DWR to build the Peripheral Canal would allow it to build the Alternative Plan.